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The Use of Artificial Objects as Ornament.

ONE of the most telling of the brilliant "hits" in Mr. Ruskin's writings is the passage in which he draws a contrast between the Hindoo, — superstitious, treacherous, and cruel, but possessed of a most refined faculty of artistic design and execution, — and the Highland soldier, the soul of honour and courage, though destitute of almost anything that could be called artistic faculty of any kind; and answers the argument which might be hence drawn against the refining and humanising influence of art by pointing out that the art of the Hindoo is founded, not upon Nature, but upon grotesque and abnormal inventions, hundred-armed deities with monstrous countenances, &c., while the Highlander, though without art, is penetrated by a love of Nature and of his native scenery which influence his whole character and tone of feeling. The contrast is an extreme one, and proceeds on the assumption of ignoring a great many other influences, nearly, if not quite, as important as those alluded to; but the general conclusion deduced from it in regard to the superior value of decorative art which is directly based on Nature over that which is artificial in its origin, is little open to question in the main. We cannot feel the same interest in ornament which merely imitates (however cleverly) artificial objects with which we are familiar, as in that which reproduces (however conventionally) the forms and the life of Nature; partly because the former are of incidental and partial interest in themselves; partly because, even if beautiful in form, their beauty has direct reference to utility, and has no meaning, or very little meaning, apart from that use. An Etruscan or Greek vase is a thing of beautiful lines in itself, and we have a satisfaction in seeing an object of practical use made to look beautiful in so simple and suitable a manner; but when the same vase is represented in bas-relief as part of the ornament of a frieze, or in the round as a finial at the angle of a cornice, we feel that the special form of the object has no reference to its position, and that if we were seeking beauty and expression by means of delicately contoured curves, we might just as well be rid of the limitations which the form of the artificial object necessarily binds us to, and employ curvatures in a more abstract and less specialised and prosaic form.

The fact, however, remains, and it is one of some interest to the student of decorative design, that in a considerable portion of the architecture which has been designed or built, artificial objects have been included in the decoration, and have sometimes even formed the main part of it; we might say the whole of it, if we include under the term "artificial" not only separate objects complete in themselves, but combinations of objects, natural and artificial, which have no real relation to one another. A great deal of this kind of ornament is being revived in recent domestic buildings, and at the Government central school of art it seems to be regarded with so much favour that in one of their instruction books a list is given (and a very fearful list it is) of the objects of artificial manufacture which may, according to the most respectable precedent, be introduced into architecture and decoration. There is, however, a better and a worse, if we cannot altogether say a right and a wrong, in the use of this kind of decoration, and the consideration of the manner in which it has been used and abused in different styles is not without its instructive side.

There may be said to be three types of artificial ornament: that in which combinations are used which are unnatural and purely arbitrary, such as human heads and trunks ending in scrolls of foliage instead of limbs; that in which purely artificial objects are used obviously because they are admired in themselves and are regarded as a fitting artistic finish to the detail; and that in which they are used merely for symbolism, like a sign of trade over a shop-door. In many cases it will be evident, on investigating the matter, that instances of the second class have originally belonged to the third; that objects now used for no apparent purpose but their supposed beauty or elegance had originally a meaning which has dropped out and disappeared. This fact has an important bearing on the question of good or bad taste in the introduction of artificial objects as ornament.

The employment of such objects as architectural ornament is usually attributed entirely to the influence of Roman architecture: not, however, quite justly or correctly. It is true the Romans had that practical and business turn of mind which led them to seek ornament in the most direct manner, and with the most definite meaning to it, by the repetition on their friezes of adjuncts of sacerdotal or municipal ceremonial; and in this respect they showed evidence of the national deficiency in regard to artistic feeling which has been recognised by modern criticism as peculiarly characteristic of them. Innate taste for ornament is not driven to these shifts, and produces work founded on something more general and less incidental. We see this even in the ornament of savage people. Such ornament is not usually founded on imitation of anything made by themselves for practical purposes,—indeed, it may be said that people who are in a state of barbarism have few such objects to introduce into ornament; nor is it generally founded directly on objects in nature in the animal or vegetable world, but rather on combinations of lines and spaces which are based upon innate though uncomprehended ideas as to proportions of spaces and curves to one another, often including what is really a very rude and rudimentary geometry. The genesis of this barbaric phase of ornament is happily indicated by Browning in his "Caliban upon Setebos," where the half-brutish tenant of Prospero's island says that he finds no finer joy in the world,—

> "When he wants little, hungers, aches not much,
> Than trying what to do with wit and strength.
> Falls to make something: piled yon pile of turfs,
> And squared and stuck there squares of soft white chalk,
> And with a fish-tooth scratch'd a moon on each,
> And set up endways certain spikes of tree,
> And crown'd the whole with a sloth's skull a-top
> Found dead in the woods, too hard for one to kill.
> No use at all in the work, for work's sole sake;
> Shall some day knock it down again."

The "sloth's skull a-top" might perhaps be quoted as the precursor of the Roman architect's ox-skull decoration, but in reality it has no affinity with that,—it is put up merely because it was the readiest thing to hand to make what to the savage seemed an ornamental finish, and had no ceremonial meaning of any kind—"no use at all in the work"; and if Caliban had had any such word as "art" in his vocabulary, instead of "for work's sole sake" he might have said "for art's sole sake," for that was precisely the head under which his attempt, however rude, would really have to be classed. And so it has been with all that can be called spontaneous decorative art: it is an attempt to evolve something beautiful because it is beautiful. The hieroglyphics of Egypt hardly come strictly under the title of decoration, they are rather to be regarded as inscriptions; and the real decorative features of Egyptian architecture are either founded on nature or (like the winged globe) purely abstract. It need hardly be added that this is almost entirely the case with Greek ornament also, which presents hardly any direct imitation of nature nor of artificial objects; indeed so abstract is Greek ornament generally that it is difficult to say positively in regard to such features as the anthemion, for example, whether they are really founded on nature or not.

There are, however, to be found in Grecian ornament the first suggestions of nearly all the artificial features which the Romans subsequently used so much more prominently, though it must be admitted they hardly come into the best or purest Greek work, at least as part of the architecture. Altars we know were decorated with heads of animals, and garlands, and sacrificial implements; masks or grotesque faces found place on the cornices; and as there is no doubt that the temples were decorated externally by shields, &c., hung up as trophies, the first step towards the use of armour and arms as decorative incidents may be said to have been furnished by the Greeks. The winged griffin with claw extended in a formal attitude, so well known in Roman friezes, is also traceable to Late Greek work, and is a part of our

subject, as a specimen of what we have called artificial and unnatural combinations of forms having no essential relation to one another. Canina, in his illustrations of Greek architecture and detail, gives an engraving of a cornice said to have been found near the Temple of Ceres at Eleusis, which is decorated with ritualistic accessories and implements as frankly displayed as they could be found in any Roman cornice,—tripods, ox-heads, platters, jugs, and fir-cones, dotted along in regular series, just as the "instruments of the passion" were used in Mediæval decoration. The comparison suggests in itself the reason why such decoration might be found in a specially prominent form at Eleusis, which was a great centre of the superstition and ritual of the day, and where accordingly one might expect to find the instruments of ritual regarded with unusual veneration. Canina himself seems to have been so far impressed with the tendency of Greek taste towards artificial decoration, that he has actually restored the beautiful finial of the monument of Lysicrates with a kind of hour-glass (it looks more like that than anything else), rising from the upper leaves of the foliated finial which we know so well, the top of which has certainly been broken and damaged, and thus left room for conjecture in restoration, ever since it was known to modern students, but which we may surely safely assume was never completed in such a way as this by the Greeks. The suggestion seems to be the emanation of a taste somewhat vitiated by that constant study of Roman work which was the great object of Canina's life.

When we come to Roman work, we find the use of artificial decoration much more developed, and carried out in many instances in a spirit anything but artistic. We find friezes decorated with skulls, hatchets, augurs' hooks, and other properties of the sacrificial staff of the temple, sometimes scattered almost indifferently and *ad libitum* on the walls, and with hardly even the attempt to arrange them so as to produce a really decorative effect. This exceedingly materialistic kind of decoration results from the double fact that the Romans were not by nature ornamentists, and that they were by nature, or rather on principle, disposed to attach much importance to religious ritual. Hence the natural desire for an easy road to the production of ornament without expending any thought upon it was satisfied in the importance attached to the utensils of religious ceremonial, which rendered them a perfectly respectable and an easily intelligible decoration when carved on the outsides of the buildings. The skull of the ox with the sacrificial fillet drooping from it was probably a representation of what had at some time or other actually been hung up on the walls of the temple, but which it became now the fashion permanently to represent in sculpture. The origin of our friend the griffin it is less easy to understand: it is probable that the Romans and later Greeks believed in the existence of some such animal, and may have thought it peculiarly suitable for a temple decoration as representing the most mysterious form of life they could imagine, and which if it existed at all must have been regarded as a sort of link between the natural and the supernatural. The festoons of flowers and fruit which became also so common may be regarded as artificial ornaments also, since they are fruit and flowers done up into artificial forms, and this form, rather than the natural details of which it is composed, is the object of the decoration, which in this instance is manifestly a permanent representation of what had been formerly merely hung on the walls. Nothing could be more prosaic than some of these elements of decoration, yet it must be borne in mind that in their own day they had a meaning, and that their *rationale* in an ancient Roman temple is quite different from what it is when they are copied, as they so often have been, on modern imitations of Roman architecture. In the latter case the ox-heads and garlands and tripods seem to be adopted with an idea that they are really beautiful in themselves, and on that ground fitting objects to use up again in modern decoration. But there is no real similarity between the modern and the original use of such decorative adjuncts. To the Roman they were the signboards, so to speak, of a temple and its ritual, and had, therefore, a definite and appropriate meaning, which to us they have not. We should do the same thing if in building a music-hall we decorated the frieze with representations of the actual instruments in use in the orchestra, or if in building a theatre we sculptured wigs and property dresses on the outside, or if in building a war-office we decorated it with Armstrong guns and crossed Snider rifles in bas-relief. We should consider this very prosaic; but this is precisely how the matter must have stood to the Roman architects: their ox-heads and garlands, their torches and *fasces* and axes (which also all come into their decorative scheme) were all attributes of their every-day life, and had a directly illustrative meaning. In a certain way we imitate them; we do represent musical and dramatic and military properties and utensils outside buildings for the respective purposes named; but then we are careful not to do it too literally: we carve outside our music-hall a harp with half-a-dozen strings, upon which no music could be made that any one would care for now; we decorate our theatre with masks which are no longer of any use or import in the modern drama,* and our military buildings with shields and spears which no modern soldier would find of any service in a fight. Whether these antique decorations are altogether without meaning or not is another question, which may be touched upon presently. But the ox-heads and garlands, when repeated in modern ornament, are altogether without meaning, at all events: they refer to something which has no relation to modern life in any way, direct or indirect.

But, after all, as we have half hinted already, the Roman architect was not the most reckless or profuse employer of artificial decoration which the history of the art has to show. The most elaborate use of this source of ornament arose in the period of the Renaissance, and is in part connected with the names of some of the greatest of artists. That of Raffaelle, in particular, is associated with a school of ornamental design which might furnish a fertile occasion of satire on the part of a cynical and uncompromising critic. The painter of "The Transfiguration, it is true, has plenty of brother artists of name and fame to keep him in countenance; and certainly the museum of curiosities which this Italian school of decorators, and still more its pendant, the French school, brought into use in their ornamental inventions, forms material for a catalogue fearful and wonderful in its nature, and quite distancing the school of Pompeii, itself a great advance on the practice of Rome. In the painted decorations of the Classic villas of the Cinque-cento period, as well as in Roman and Florentine palaces, we find a system of decoration pressing into its service all kinds of heterogeneous and ill-assorted objects,—spheres, caskets, scrolls, ribbons, cornucopiæ, lamps, shields, tassels, necklaces, bundles of fruit, hour-glasses, angle ornaments resembling open fans, and many others, all strung together (in general) by a system of artificial foliage, which curls and twists through them all. The revival of this school of decoration, with such great extension of its caprices, took place in Italy but a comparatively short time after architectural ornaments had begun to grow out of the reminiscences of this tendency in Roman art. In the painted decoration at Assisi we find traces of the artificial ornament of the Roman period, traces sufficiently clear, but showing, nevertheless, a gradual and certain submerging of these artificial elements of ornament under a new and living school of decorative art of what we now know as the Gothic type;† but in Italy, before this latter had time to become properly developed, its enemy, the Renaissance, came in like a flood, and a fresh era of entirely artificial and conventional ornament set in again. One of the most objectionable features in this school of decoration was the manner in which the human figure was dismembered and made to appear only as something to be cut up into bits and fitted into the puzzle. Faces and busts were stuck on to anything; female figures ended in long scrolls turning over their own heads; and the climax of absurdity is reached in such decorations as those designed by no less a hand than that of Bramante in the Castle of St. Angelo, where we may find for instance a face between two extended horizontal rods draped with curtains festooned from them, with ribbons hanging from the ends of each, while in the centre immediately below the human face, hangs a brooch with pendants; the whole suggesting the idea that a gentle feminine malefactor had been decapitated, and the head gibbeted along with the personal adornments of the deceased, as an awful warning to the beholders. Cupids,—*amorini*,—become so completely a piece of decorative furniture that they also, although they are really representations of little boys, and therefore so far natural ornament, become almost conventionalities, and are quite so in the manner in which they are treated and combined. In one of Raffaelle's designs (that for the Cardinal Bibbiena's bath-room in the Vatican) these little figures are perched on festoons stretched across between the posts of conventional canopies, reminding one of nothing so much as four-post bedsteads turned into ornament; the Cupids posing like singing-birds on the perch of their cage. Possibly, after all, this was the idea intended to be conveyed, and embodied a noble symbolism, though one which ought to have been rather tantalising, one might suppose, to a member of a celibate priesthood.

But with all this absurd conglomeration of objects mostly having little meaning or beauty in themselves, there is in the Renaissance school of arabesque ornament with which the name of Raffaelle has been so much associated, a redeeming feature, in the grace and even (strange as the expression may seem) the logical sequence with which it is put together. The ornamentists of the Cinque-cento were, in short, really artists; and though allowing themselves, in their admiration for antiquity, to play with some very absurd toys in the way of ornamental motives, they were never content to put these together in the careless and jumbling fashion with which the more prosaic of the ancient Roman artists were content. It may be said, indeed, that the objects made use of had changed their value; from being to the ancient Roman representations or symbols of sacred and ceremonial things, to the Cinque-cento artist they had become nothing but mere ornament. But the latter, while making use of them, and adding to them many new objects from his own fertile fancy, saw instinctively the necessity for combining them into a connected whole; and this he effected by means of a light and elegant system of conventional foliage, springing from some of the objects, entwining or supporting others, and making it almost appear as if all this *bizarre* collection of curiosities were the natural outgrowth of a central idea, to which they were all in some way related. Stems grew out of platters and out of lamps, and out of tripods, and out of all sorts of things, and upon their freely and gracefully turning scrolls hung all kinds of articles, as on the twigs of some conventionalised Christmas-tree. Nothing could be more utterly conventional, nothing more unlike Nature, in any of her details, than this arabesque foliage; but it had this merit, besides its real and often exquisite grace of line and balance of curvature, that it represented, at all events, a principle of nature,—that of growth and development from a central stem by a gradual division and subdivision of lines parting from the main generating line of the ornament, as the branches part from the trunk. And this recognition of Nature (though afar off) in the main governing motive of the Renaissance arabesque ornament raises it above mere artificial imitative ornament, and gives it a life and vivacity to which antique Roman ornament could seldom, if ever, lay claim. This result is instructive, for it shows how much real interest and beauty may be evolved even out of prosaic, and in many respects unsuitable, details in ornament, if only the method of generation and development of the ornament is founded on and in accordance with natural law and natural life. Thus we come back indirectly to a conclusion in favour of the criticism quoted in our first paragraph; since we find that amid all the fanciful and utterly arbitrary use of artificial objects in the Italian arabesque ornament, the one quality after all which gives any real life to it is that which is derived more or less from Nature.

But we must break off here, and defer to another number the notice of some of the characteristics of artificial ornament in France and England, as well as the general consideration of the degree of value attaching to decoration of this class, and the extent to which it is or is not compatible with a pure taste in decorative design.

* Though the recollection of them in connexion with the theatre still survives in the expression "*dramatis personæ*," some of the "persons" among our readers may not remember that the very word "person" is derived from the antique stage, and means "a mask": that through which, or from behind which (*per—sono*), the sound of the actor's voice is heard.

† The border ornament of Ghiberti's gates illustrates the same mingling of styles: the floral ornament springs from vases like those so familiar in the full Renaissance period, but the foliage itself is nearly naturalistic in its forms and grouping.

THE CORPORATION, THE BOARD OF WORKS, AND THE BRIDGES.

We have been somewhat premature in our congratulations on the peace and amity established between the City authorities and the Metropolitan Board of Works. It is true that the published accounts of the proceedings of the latter body were such as to lead to the conclusion that a good understanding had been arrived at as to the proposed eastern bridge over the Thames. How it could have been represented that the Corporation would apply the proceeds of the coal and wine duties to pay for the high-level bridge of the Board, at the very time that they were proposing a low-level bridge of their own, it is not for us to guess. Like other procedures in Spring-gardens, such as the application of public funds to Parliamentary expenses without sequence, this must remain, if not inexplicable, unexplained. But it seems that as there are two parties at the Board of Works, so are there two parties in the City, and a long debate in the Court of Common Council on the 7th inst. only resulted in a drawn battle.

Our first and steady aim in this matter is to do all within our power to prevent the demolition of London Bridge. We regret to find, by the passing of the "previous question" at the Court of Common Council, that even on this point there is as yet no certain decision obtained. We use the word demolition advisedly. On architectural considerations alone we should extremely regret any such interference with the elevation of one of our noblest national monuments as is proposed by those who have the control, or the partial control, of the bridge. At the same time, we are not prepared to urge that a manifest convenience to London should be forbidden, if the question of taste were all that stood in the way. But as the case actually comes before the public, the convenience is more than doubtful. It is as clearly known as anything of the kind can well be, that to widen London Bridge would in no way relieve the City traffic, unless the approaches were widened in a corresponding degree. This would involve an expense which no one has ventured to propose. Therefore, on the ground of the surveyor's view of the case, it is clear that the proposal to widen is an ill-considered one. It would be a bit of tinkering, doing no good. In addition, moreover, to the objections which, first, the architect, and, secondly, the surveyor, must oppose to this plan of tinkering the bridge, those of the engineer are absolutely fatal. We have shown, from the statement of Sir John Rennie himself, that portions of the bridge were in a most precarious position at the time of the striking of the centres. Actual movement took place, and that of a very menacing description. The cause of this motion was precisely the same as that which now threatens the stability of the structure. The Corporation overruled the engineer. They made him put the bridge in the wrong place. They escaped a total wreck rather by good fortune than by any sagacity on their own part; and they now seem determined,—at least, a party does,—to complete the mischief commenced in 1830.

With reference to the mode of relieving the bridge, it cannot be pretended that enough information has yet been collected. The question of site is undetermined. The question of level is undetermined. The Corporation are for a low-level bridge, with a *bascule*, or semi-drawbridge arrangement for allowing vessels to pass. This plan has just been set aside for the present session. The Board of Works propose a high-level bridge, under which 80 or 90 per cent. of the vessels ascending the Thames could pass without impediment. The *per contra* to this scheme, which is one that has much to recommend it, is the doubt whether any one would use the bridge if built. A spiral ascent of one in forty is so serious a barrier that to incur the expenditure of more than a million on a mere guess would be little more than childish. Again we have to ask for information as to the results of the outlay already incurred, in this part of London, for the crossing of the river. A statistical account of the two tunnels, and of the steam ferry, is the first requirement for forming an opinion. That no such account has been prepared, or, as far as we can tell, even asked for, by the Metropolitan Board, is a sign that, as on former occasions, they are gaily attempting a prodigious leap in the dark. It is melancholy to see a subject of such metropolitan and national importance as the crossing the Thames in London, instead of being settled on the true principles of art and of science by a commission of competent experts, made the subject of squabbles between board men and councillors who, however respectable in their several callings, are profoundly ignorant of what is required for the decision of any question of an architectural or engineering nature.

We must add that the result of the handing over of the Waterloo and Charing-cross Bridges to the Metropolitan Board of Works has hitherto been anything but satisfactory as far as the cleanliness and good order of the road and pathways is concerned. The Board of Works seem to have thought that all that they had to do was to pull down the toll-bars. The look of squalor that a few days' neglect has been enough to produce is incredible. Complaints of great vigour as to the filthy state of the Charing-cross footbridge have filled the papers. As to Waterloo Bridge, not only is an adequate service for its maintenance and clearing requisite, but the removal of the toll-houses, now their *raison d'être* has ceased, should not be delayed. The verandah roofs were convenient enough for those who had to feel in their pockets for a halfpenny; but they are now simple excrescences,—we question whether they were even part of the original design of the toll-houses. The noble effect of the approach to the bridge is spoiled by these vile little cabins. The bridge has been bought cheap; and on its presentation to the public it should be allowed to assume its proper character, not of a mere expedient for crossing the Thames, but of a noble architectural monument.

THE ARCHITECTURAL BILLS OF FARE, 1878-9,

The two lists of papers proposed to be read, and of subjects to be discussed, in the upper and lower houses, as we may call them, in Conduit-street, are before us, and promise, we must say, a more than usual amount of novelty and specialty of interest.

Taking the Institute selection first, it would seem that the Sessional Papers Committee has been remarkably successful in its efforts to obtain promises for the ordinary meetings, for we hardly ever remember to have seen so full a list issued at the very commencement of the session. There appear to be, in fact, more papers than room can well be found for; but this is a discrepancy in the right direction, as there are generally one or two disappointments or postponements in the course of the session, and some of the papers named may not take up the whole of an evening.

Some of the most interesting among the papers promised seem likely to be those contributed by gentlemen outside the profession of architecture. Among these we notice with pleasure the name of Captain Burton, the indefatigable traveller and observer in so many parts of the world, who is to communicate the result of observations on the remains of buildings in Midian,—a ground seldom traversed by English architects. Foreign architectural subjects are, in fact, rather largely represented in the programme,—"The Vaulting and Stalactites of Persia," by Mr. Purdon Clarke, and "The Haram at Jerusalem," by Lieut. Conder, R.E., being two prominent subjects. The latter is one of the papers we have already referred to as contributed from non-architectural sources, and is one which is, at least, sure to evoke a warm discussion, touching as it does upon questions of archæology which have been so greatly debated by able and eminent men with very opposite views. Lieut. Conder, though he writes "R.E." after his name, is, in fact, no mean architectural critic, and has an established right to speak upon the subject. We may perhaps consider Irish church architecture as a "foreign" subject (it is certain that not a few men who know the Continent well have never been in the Green Island); at all events, Mr. Newenham Deane will probably have something to say in regard to it which is not familiar to architects dwelling in London. Another of the non-professional contributors is Mr. John Pennethorne, whose elaborate work on the "Geometry and Optics of Ancient Architecture" has been very fully noticed in these columns. As our readers are aware, we are not prepared to accept the views of Mr. Pennethorne in regard to a good many of the points dealt with in his book; but it will be a matter of considerable interest to hear his own statement in regard to a question to which he has given so many years of his life; and the request on the part of the Institute that he would do so was a fitting compliment both to the author of so remarkable a work and the bearer of a name so esteemed and respected among recent English architects. Two subjects among the practical ones (which we are glad to see are duly represented) have a certain special interest,—that by the City Architect, on "Lighting by Electricity," and that by Mr. Verity on "The Modern Restaurant." The former, in fact, is one of the most important subjects before the public at present, and we are very glad to see the Institute of Architects recognising the practical relation of such a subject to the duties of the architectural profession, and offering to consider it from an architect's point of view. The subject of the *restaurant* is less fascinating; indeed, we are not sure whether the *restaurant*-keeper may not reasonably be regarded as a kind of bogey or ogre to the present generation, who is gradually swallowing up everything and getting into his hands the strings of all kinds of important concerns not the least necessarily connected with the supply of eating and drinking commodities. But there is no doubt that, partly owing to this encroaching power of the *buffet*, the restaurant forms a special feature in the architectural work of this day, and it will be well indeed if the consideration of the subject at the Institute should lead to any improvement on the style and manner in which establishments of this class are usually designed and decorated, and to a substitution of something like refinement and good taste for tawdriness and glitter; if so, the paper will not be thrown away. Mr. Verity is well up to the work. Mr. Penrose has something new to tell us (we presume) in the course of some notes "On St. Paul's Cathedral"; and another of the practical subjects is that of "Bills of Quantities and their Relation to the Contract," to be treated of by Mr. Honeyman, of Glasgow, and concerning which we opine that there is really very little to be said, and that little very obvious and easily disposed of by any clear-headed person; but, of course, all will have their say on a matter about which there seems to be a difference of opinion and of practice which to ourselves is quite incomprehensible.

Before quitting the subject of the Institute programme, we cannot but give a word of hearty recognition in regard to the manner in which the work appears to be carried out by the present secretary. The pamphlet containing the usual annual list of members, donations, and other current information, at once struck us as exhibiting a completeness of editing in every particular which speaks well for the manner in which this portion of the work of the Institute will in future be carried on.

In the programme of the Architectural Association, the most really important subject, considering that the society is one largely attended by young men in their pupilage, is the discussion which is to be opened by Mr. A. Payne on the question, "Architect, or Architect and Surveyor?" It was an excellent idea, whoever originated it, to propose the consideration before such a society of this question, upon which really turns the view which the rising generation are to take of their profession, and the course of the studies by which they are to aim at success in it. We will not offer a pre-discussion of the subject, which could not be gone into in the course of a running commentary of this kind, but we will allow ourselves just to express the hope that the turn of the discussion will be in favour of giving full weight to the practical side of the architect's profession, which has been too often of late entirely lost sight of amid a haze of glorious aspirations after an ideal profession, in which every member should be equally master of all forms of artistic production. The paper immediately to follow this, on "Party-walls: the Law and the Practice," has also a wholesome practical tendency, and no one is likely to be better able to throw useful light on this complicated subject of so many disputes and heart-burnings than Mr. Blashill. Mr. Aston Webb has something to say about "Windows,"—a very fertile subject for architectural fancy and suggestion; and "Organs and their Treatment" is to form the subject of a paper from Mr. Somers Clarke, jun., a practical organist himself, and therefore the better able to do justice, both from an architectural and a musical point of view, to a matter on which architects have certainly something to learn. It is worth

remark that the subject of "Restaurants" (combined with "Hotels") comes into this programme as well as into that of the Institute. Mr. Neale contributes some notes on the measurement of old buildings, and Mr. R. P. Spiers a paper on the "International Congress of Architects at Paris." In each case the writer of the paper is known to be specially qualified to treat the subject. Other papers of more or less interest combine to fill up a good and useful programme, of which we have noted the salient points only.

THE NORTHERN IRON TRADE.

After some years of depression, there is a change in the condition of the iron trade of the North of England, although it at first is as a mere shaking of what may be compared to the dry bones that remain of a once full trade. It is true that it is not brought about entirely by favourable cause, for it has been in part contributed to by a reduction in the output of iron; but this was necessary, and the change is one which is a matter of congratulation. In the height of prosperity a few years ago there was a very great increase in the production; and though at the time the consumption was as great, yet when only a normal height in the demand was registered, the production was in excess, and large stocks accumulated. There were to be dealt with the difficulties of price and of excessive output. The first was the most easily dealt with; for, as the stocks were very large and increasing, and as the output was above the requirements, the market became dull, and a continuous fall in prices brought rates down to the level from which they rose seven or eight years ago. But it was not so easy to adjust the production to the requirements; for there were difficulties in the way, such as contracts for materials long in advance, &c., and there has been for some time a growth in the average production of crude iron which led to a further enlargement of the output. But when rates became so low that in some instances they were unremunerative, it soon altered that condition, and some makers whose works were not situated advantageously for producing cheaply found that it was the least of two evils to close them. There has been thus a very considerable diminution of the output, and a readjustment of the balance between supply and demand.

Whilst this has been in progress, stocks of both crude and manufactured iron—the former especially—in the hands of the makers, have grown very greatly. In part, this is traceable to the long-continued enlargement of the output, and in part to the declension in the demand. By a more economical working of the furnaces, and by the blowing out of some of the older and less productive furnaces, the average output has been considerably increased, and thus the step which was ultimately taken of reducing the production was lessened in its operation by the enlargement of the average amount made. But as the result of friendly arrangement, about a dozen furnaces were put out, and a few were transferred from the manufacture of Cleveland pig-iron to that of iron from ore imported into the district, the result being that there is a very considerable reduction in the output of the first-named class of iron. At the present time, too, the demand usually rises, a large quantity of iron being shipped out of the country, more especially to Germany and Belgium, in the autumn months. This increase is now known, and with the reduction of the output there is inevitable effect of a reduction of the stocks in the hands of the makers to an extent which must be a considerable relief. However it is brought about,—and it must be acknowledged that it is not brought about by the most pleasant or profitable means, so far as the factor is a reduction of the output,—there is now a sounder base for the trade of the North, that of one the output of which is even below the demand. In addition to the low amount of iron made in comparison with what was known a year ago, there is also a very considerable reduction in the price, which reduces the value more than proportionately; but this is in a great degree compensated for to the producers by the continued reductions in the price of raw materials and the lower rates now ruling for wages, and in the lowness of price there is one of the most hopeful signs for the future. About one-half of the whole of the pig-iron produced in the north-east of England is sent elsewhere for manufacture, and it is evident that unless iron could be produced as cheaply there, and even cheaper, than elsewhere, so large an export trade would be impossible. During the period of high prices the amount of crude iron sent out of the district was in a much lower proportion; but as the price has fallen, there has been a gradual and large growth.

Bearing in mind the causes of this improved condition of the iron trade of the North, it is tolerably easy to observe that there are all the signs of a continuance of that improvement. A low price is assured, because there is a very large reserve of smelting plant now idle, which would be brought into operation were there any large increase in the prices, and the effect would be to glut the market with a production in excess of its requirements. That low price, thus practically assured, should not only further stimulate the demand for crude iron from other manufacturing centres which have not facilities for as cheap production of pig iron, but it should also stimulate the local demand for iron for foundry purposes and the malleable iron manufacture. The former of these is now in a slight degree recovered from the depression it also knew; and though the same cannot be said of the latter, yet it is unlikely that it will long remain at its present low estate. Although the prevailing tendency at present on established railways is towards the use, almost exclusively, of steel rails, yet (overlooking the possibility of the use of Cleveland iron for that purpose) there is not to the full that preference in foreign parts, and to the possible construction of new lines in the East and in some of our colonies, the manufacturers of iron rails may look with some hope. The shipping trade is depressed, but the low price of iron is stimulating the building of vessels, and giving an impetus to the plate and angle-iron manufactures; and though the other chief branch of the iron manufacture is at a low ebb, it is certain to revive with any commencement of large constructional works, which, at any rate, is nearer than it was. It is on these probabilities that the iron trade of the North has to base its hopes, and a production no larger than its requirements and low prices should enable it early to feel a beneficial impulse from a rising trade tide. In the North, the iron trade is the controlling industry, and as its depression has had very marked effects on the constructional industries, it is to be hoped that the breath of the revival may speedily make its influence felt through these. In no district, perhaps, has the general dulness in the mineral trade been more marked than in the North-east in this manner; and as the great industry of the North begins to recover tone, the anticipation may be allowed that the effect of the revival will be as markedly beneficial as the dulness was markedly adverse.

THE RECENT HALF-YEARLY RAILWAY MEETINGS.

CONTINUED PROGRESS OF NEW WORKS.

The meetings of the railway companies for the half-year ending with June, which have just been brought to a close, show that, as regards many of the great lines, large extensions, and a very heavy outlay of capital in the construction of new works, are still going forward. A notable feature in the reports of many of the leading companies is the great falling off in the traffic during the half-year, owing to depression in trade. This falling off specially applies to the London and North-Western and to the North-Eastern Companies, the great depression in the iron trade having very seriously affected the revenue of the last-named company.

The report of the *London and North-Western Company* shows that, although the receipts from passenger traffic have been maintained, and show a slight increase as compared with the corresponding period of 1877, there was a heavy falling off in the merchandise and mineral traffic, the decrease being no less than 35,177*l.* as compared with 1877. Notwithstanding this decrease, however, the previous dividend, at the rate of 6 per cent. per annum, was declared, the chairman observing at the meeting that they were getting the advantage of a large reduction in working expenses, which was due in a great measure to the reduced price of iron, coal, copper, and other materials. A large portion of the reduction in their working expenses was, however, due to the better working of the line consequent upon the additional accommodation at stations, and the doubling of parts of the line. In the course of his remarks, the chairman incidentally stated that they had now laid 1,600 miles of steel rails, extending nearly the whole length of the main lines of the company. They would, therefore, now continue to have the advantage from the use of those steel rails, if the makers would continue to keep up the quality; but he was always afraid of some process coming into play which would have a similar effect on steel as the hot blast had in the manufacture of iron, since which no good iron had been made. They had, therefore, always to fear with steel that with the price going down the makers would reduce the quality. Adverting to the unproductive capital, which he said was 2,000,000*l.*, the chairman expressed a hope that during the next spring half-year, not only the Nottinghamshire lines, which the contractors were under contract to complete by Christmas, but several other lines in progress, would come into profitable earning. The meeting sanctioned the addition to the capital of the company of the sum of 2,842,437*l.* under the Act of 1878, authorising the construction of new lines in Lancashire, Yorkshire, and other places; also a further addition of 401,174*l.* including 116,000*l.* for completion of the Holyhead harbour; 55,500*l.* for cottages, additional sidings, and other works at Willesden; 9,600*l.* for goods accommodation at Dewsbury; 134,539*l.* for additional siding and other accommodation at different parts of the line; and 85,535*l.* for additional land and minerals. The capital of this great corporation authorised up to the present time is 81,884,701*l.*, of which sum 75,475,800*l.* had been created and expended up to the end of June last.

The report of the *Great Western Company* showed that there was an increase in the passenger and merchandise traffic receipts during the half-year of 11,502*l.*, but a decrease of 19,269*l.* from minerals, being a net decrease of 7,767*l.* On the other hand there was a decrease in the expenditure of 28,789*l.* The report stated that the alterations in the Paddington Station, in connexion with the widening of the line between London and Slough, were in active operation, and that great convenience had already been experienced in the working of the traffic in the Paddington Station by the alterations which had been effected in the roads and platforms on the arrival side. The new lines and subway between the Westbourne Park and Bishop's-road Stations were also now completed. Adverting to the works of the Severn tunnel, the report stated that the heading had now been driven to a length of a mile and three furlongs under the Severn, leaving a distance of seven furlongs still to be driven to finish this portion of the work. The material through which the heading had passed continued to be of the same favourable character as before. The three additional shafts required for the construction of the in-shore portion of the tunnel were in progress. Amongst other statements made at the meeting, it transpired that the company are about to construct a branch line to Princetown, extending to the convict prison at Dartmoor, and that the Government have agreed to find 5,000*l.* of the capital. A vote of 290,000*l.* was granted by the proprietors for new works, including 40,000*l.* for new lines at Paddington, between Bishop's-road and Westbourne-park Stations; 20,000*l.* for the enlargement of the Paddington Station; 50,000*l.* for doubling the line between Paddington and Slough; 20,000*l.* for new stations at Cardiff, Neath, and Swansea; and 75,000*l.* for extensions and other works at the Birkenhead Station. In the course of the proceedings, the chairman observed that whereas in 1861 they had 122 trains in and out of Paddington Station daily, they had now 426 trains. In point of capital, the Great Western Company is at the head of the English railways, with the exception of the London and North-Western Company and the Midland Company. Its authorised capital at the end of June was 64,507,477*l.*, of which 63,703,727*l.* had been created and expended to the same date. Although the London and North-Western Company has a larger capital than the Great Western by more than 20,000,000*l.*, it is not unworthy of remark that the mileage of the latter is much greater than that of the North-Western Company, which is 1,653¼ miles, whereas that of the Great Western Company is 2,139¼ miles, with 33¼ miles in course of construction.

The report of the *Midland Company* submitted to the shareholders showed that, as compared with the half-year ending June, 1877, there was an increase in the traffic receipts, both as regards passengers, merchandise, minerals, and

cattle. The capital expenditure during the half-year had been 1,178,602*l.*, of which 13,600*l.* was for additional expenditure on the Whitecross-street warehouses, and 65,000*l.* for the purchase of land and property in London. On lines in course of construction 433,431*l.* had been expended in the course of the half-year, and 332,980*l.* on lines open for traffic. The chairman stated at the meeting that the total further estimated expenditure to complete all their works was 3,554,000*l.*, 627,000*l.* of which was to be expended on lines open for traffic, 1,620,000*l.* on lines in course of construction, 437,000*l.* on joint lines, in which the company had an interest, and 868,000*l.* on lines not yet commenced. Adverting to the new branch line and dock which the company are constructing at Poplar, he stated that nearly one-third of the piles were driven for the coffer-dam for the river-wall, and the excavation for the dock-wall was being proceeded with. A resolution was passed at the meeting authorising the creation of further capital amounting to 2,050,000*l.* for the several works in progress and to be commenced. The present authorised capital of the company amounts to 66,646,562*l.*, of which 63,913,502*l.* have been created and are in course of expenditure. The new lines now in course of construction by the company are 158¼ miles in length, which, when completed, will make the entire length of the Midland Company's system 1,566¾ miles.

The *Great Northern Company's* traffic receipts showed a marked increase as compared with the corresponding period in 1877, the excess for the half-year ending June last being 30,000*l.*, whilst the expenditure was nearly 20,000*l.* less than in 1877. During the half-year 666,000*l.* was expended on capital in new lines and other works, 402,000*l.* of which was on lines open for traffic, including 36,812*l.* on account of the new tunnels at King's-cross Station. The passenger traffic to King's-cross Station now passed through these tunnels, whilst the old tunnels were used for the goods traffic. On lines in course of construction 89,000*l.* had been spent within the half-year, in addition to 237,000*l.* as the subscription of the Great Northern towards new lines which they were making jointly with the Midland and the Manchester and Sheffield companies. They had likewise spent within the same period 26,111*l.* upon the block system and locking apparatus, the total expenditure of the company which had now been incurred on this system alone being 359,124*l.* Referring to the further expenditure of capital on additional works, the Chairman said it was absolutely necessary for the purposes of the traffic. Apart from the new lines and other works in progress, the directors proposed to expend 150,000*l.* Of this sum 17,000*l.* was proposed to be spent on the extension of the Farringdon-street goods warehouses. They were originally constructed with a view to the handling of something like 100,000 tons of goods during the year, but this had been vastly extended, and the goods with which they had to deal there amounted to 150,000 tons, which was still increasing, so that an addition to the goods warehouses at Farringdon-street was absolutely essential in the interests of the company. They likewise proposed to expend 36,000*l.* on the repairing-shops at Doncaster, which could no longer be delayed, as the wagons were now repaired without any covering whatever, the men working in the open air, and that entailed a very great deal of loss to the company. There were also several other items, including 7,240*l.* for additional sidings at Finsbury Park and Hornsey; and 33,000*l.* for further carrying out the block system. For these purposes the meeting sanctioned an additional outlay on capital account of 152,142*l.* Under an Act of Parliament passed last session the Great Northern and the Great Eastern companies jointly are about to construct a new line from Spalding to Lincoln, at an estimated cost of 1,106,000*l.* The present length of the Great Northern Company's system is 754 miles, and in addition they are constructing 110¼ miles of new railway. Their authorised capital on the 30th of June was 32,828,050*l.*, of which 31,205,450*l.* had been created.

The report of the *Great Eastern Company* stated that the gross revenue for the half-year was 1,327,606*l.*, against a gross revenue of 1,294,770*l.* in the corresponding half-year of 1877. The chairman, in his address to the shareholders, dwelt at considerable length on the large expenditure which had been incurred in the improvement of the permanent way, and the laying down of steel rails. During the half-year 94,000*l.* had been expended, and at the end of the half-year they had 350 miles of steel rails laid down on the line. Experiments had been made with reference to the endurance, or, as it was called, the life of a steel rail compared with an iron rail, with the result of showing that the duration of a steel rail, which had been put at thirty years, had been confirmed. On some parts of the line they had been laid down and in use four years, and it had been proved that whereas iron rails would last only three years, steel rails would stand for thirty years. The great value, therefore, of steel rails in the future permanent expense of maintaining the railway, would very soon be materially felt. In the course of the next three years they would probably lay down an average of seventy miles with steel rails, so that in three years from the present time there would be 560 miles of steel rails laid down on their system, which would comprise the greater part of the main line. They had in stock a very large amount of steel rails at their present low price, and they had a quantity ordered at the same rate. Adverting to prospective capital expenditure, he said they could not hope, for a very long time to come, to diminish very materially their capital expenditure. They had got to finish several works, among others the Bishopsgate station for goods, and they were just completing the Chingford line into the Forest, and the line to the Alexandra Palace. The estimate of the capital expenditure for the current half-year was 150,000*l.* The company would have to contribute 500,000*l.* towards the making of the Spalding and Lincoln line. The present authorised capital of the company is 34,616,869*l.*, of which 32,322,941*l.* have been created, the number of miles of railway constructed being 789, and 12¼ miles in course of construction.

The traffic receipts of the *London and South Western* line show a slight increase as compared with June, 1877. The report stated that station improvements to a considerable extent have been carried out in various parts of the line, including the raising of platforms to conform to the recommendations of the Board of Trade. It also states that the Waterloo Station improvements and enlargements have sufficiently advanced to enable a portion of the new sheds and platforms to be soon available for traffic. The diversion near Vauxhall of all the main lines is now completed, whereby a large additional space has been appropriated for goods traffic purposes. Amongst the new lines and other works in progress is the doubling of the line between Sampford Courtney and Okehampton; a large new station at Salisbury; and a junction of the Ascot and Woking line with the Aldershott line. The authorised length of the company's lines is 722½ miles, of which 717 miles have been constructed. The capital authorised to the end of June last is 23,230,291*l.*, of which 22,191,890*l.* have been created and expended.

The traffic receipts on the *South Eastern* line for the half-year showed a very large increase over the receipts of the corresponding half-year in 1877, the increase amounting to between four and five per cent. The report referred to the Dover and Deal line, which is being constructed at the joint cost of the South Eastern and the Chatham and Dover companies. It also stated that a new steamer was in course of construction for the traffic between Folkestone and Boulogne. The report likewise referred to a decision of the Railway Commissioners in proceedings taken against the company at the suit of the Town Council of Hastings. The Commissioners had delivered judgment in favour of the Town Council, and ordered the company to carry out many works at Hastings and St. Leonards, involving new expenditure to a considerable amount. The effect of this decision, if confirmed, would practically transfer the expenditure of the capital of the shareholders to the control of the Railway Commissioners, and the directors had therefore taken steps to test the validity of the enormous powers claimed. This company, whose lines are at present 332½ miles in length, are constructing additional lines 22 miles long. The created capital to June last was 20,635,974*l.*

The increase of traffic on the *London and Brighton* line appeared by the report to be very great, the excess amounting to more than 8 per cent. over the receipts of the corresponding period in 1877. On this great increase the chairman stated at the meeting that he did not attribute it to the Paris Exhibition, which did not at all assist them until June. Considering the period of depression, it had surprised both the directors and himself. It had arisen, he believed, from building, and the population going on increasing. The capital expenditure of the company during the half-year was 221,548*l.*, of which 35,651*l.* was for the enlargement of the London Bridge Station now in progress, and 19,970*l.* for the purchase of the freehold of the Terminus Hotel. The sum of 50,134*l.* had also been expended on the Tunbridge Wells and Eastbourne line, now in course of construction. A special grant was made at the meeting of 150,000*l.* towards the construction of the works about to be commenced at Newhaven Harbour. The company's created capital up to the end of June was 20,025,808*l.*, whilst the number of miles already constructed is 360½, and 70 miles of new railways are at present in course of construction.

The exceptional depression in the iron trade, which has for so long a period affected the district which the *North-Eastern* line intersects, has had a very serious effect on the traffic of this company. The decrease, as compared with the half-year ending June, 1877, is no less than 143,676*l.*, and applies to every description of traffic,—passengers, goods, and minerals, but the falling off in the latter is about two-thirds of the total diminution, the decrease in passenger traffic being 14,786*l.*; in goods, 37,000*l.*; whilst in minerals the falling off amounts to 95,304*l.* As regards capital, the outlay during the half-year has been 407,000*l.*, of which 239,278*l.* had been expended on new lines now making, and 168,000*l.* on lines already opened for traffic. The company's present mileage is 1,446 miles, whilst 77¼ miles of new railway are in course of construction. The authorised capital amounts to 58,895,994*l.*, of which 55,652,697*l.* have been created.

The report presented at the meeting of the *London, Chatham, and Dover* shareholders showed that there had been a large increase in the traffic receipts during the half-year. A feature in the report was the purchase by the company, from the Channel Steam Ship Company, of the steam-ship *Calais-Douvres*, which had been placed on the station between Dover and Calais.

The *North London* line displays a remarkable vitality, both as regards traffic and the enterprise of its promoters in the construction of works. The line, though a short one, is yet one of the most important in the metropolis. At the recent half-yearly meeting, the chairman stated that in the corresponding half-year of 1877 they were able to pay only 6½ per cent., but now they declared a dividend at the rate of 7¼ per cent. The company had passed through most of its difficulties, and he believed they would have few more to contend with. When they had completed all the works now ordered and engaged to be executed for the convenience of the Great Western, the North-Western, and the Great Northern Companies, they would have a revenue from them amounting to six per cent. on the outlay, in addition to which they would have the traffic of those companies over their system. During the half-year 35,000*l.* had been expended on those works, and 59,000*l.* more had yet to be expended. They were also about to construct a new station at Mildmay Park. The whole neighbourhood had been built upon, and covered with good residences, and he had every confidence that the station there, when erected, would pay a large interest on the outlay. The estimated cost of the station was 6,000*l.* Turning to the revenue account, he said that for the half-year the number of passengers carried had amounted to 15,306,072, against 14,668,316 in the corresponding period, the increase in money having been 3,776*l.* They had a capital somewhat under 4,000,000*l.*, and twelve miles of railway, and upon the amount expended the shareholders were getting a dividend that day of 7¼ per cent. The report stated that possession had been given to the Great Western Company of the warehouses and offices constructed for them at Poplar, and the Great Northern Company would shortly enter into possession of the new premises constructed for them at that station. The increased dock accommodation and facilities for dealing with the shipping traffic, would, it was expected, result in a large accession of traffic at the Poplar goods station.

The receipts on the *Lancashire and Yorkshire* line showed a considerable falling off as compared with June, 1877, which was attributed to depression in trade. At the meeting the chairman stated that the expenditure on the new lines in course of construction was still heavy.

The length of these new lines is 41¾ miles, the number of miles already opened being 452¼.

The *Manchester and Sheffield Company's* receipts for the half-year were slightly in excess of the preceding half-year. The number of miles already open is 455¾, and in addition the company are constructing 48¾ of new railways.

The chief feature of interest in the reports and proceedings of the *Metropolitan* and *Metropolitan District Companies* had reference to the Inner Circle Completion line. The two companies have agreed to promote a Bill in Parliament, next session, for completing the line *viâ* Tower-hill, with power to construct a junction with the East London line, near Whitechapel.

The leading Scotch lines all show a great falling off in traffic. The falling off in the traffic of the *Caledonian Company* is very marked, applying to both passengers, merchandise, and minerals. As regards the latter the chairman observed at the meeting that the decline of building operations in the city and suburbs of Glasgow had told considerably against them, as they accommodated some of the best stone quarries in the country. The *Glasgow and South-Western* and the *North British Companies* both participate in the falling off, more particularly the former company, the report stating that the mineral receipts had not been so low since the half-year ending July, 1874.

EDINBURGH'S ONE STREET.

The days and hours of the antiquary or archæologist, as far as the world knows, pass pleasantly away. When summer and autumn are in the full bloom of their beauty, he wanders over the land in the companionship of like-minded enthusiastic brother and sister students. For the time being he heeds not the stream that dimples along the valley; his eyes are open only for barrows and *tumuli* and other "*monumenta vetusta*": he climbs the mountain-side to gaze upon a cairn or a vitrified fort, and when the sun is westering, he and his companions seat themselves on the heather or the grass, and pic-nic in a thoroughly unantiquarian fashion, within, it may be, a circle of grey stones, the dumb memorials of a people of whom they know nothing. When the leaves fall and "the wind whistles cold o'er the snowy wold," what recks the archæologist of the season's inclemency? The fire in his grate burns warmly and brightly; on his table lie the tomes of Dugdale or Gough, Fergusson or Lubbock; and in such like goodly company, the months roll away till blue skies and pearly clouds come again.

As we write these lines, we have before us a store of ancient history,—half a dozen quartos, written in an almost dead language, giving us vivid glimpses of civic life in "the grey metropolis of the north" from 300 to 400 years ago. From the pages of Arnot, but especially from those of Maitland, much may be gleaned of the early history of Edinburgh; but, placing these aside, there is a vast fund of information to be gathered from the records of the city, which, till lately, have been hidden from all but a few privileged eyes.

In those days Edinburgh consisted of one street, the High-street or Hie-gait, from either side of which narrow and steep alleys, named closes or wynds, sloped to the north and south. There is a tradition that this street,—side-walks there were none,—was first paved by a Frenchman named Marlin,—but certain it is that on the 18th of June, 1532, the provost, bailies, and council contracted with "Jhonne Mayser and Bartrahame Foliot, Franchemen," to make and build the causeway of the town. The Frenchmen were to quarry, dress, and lay the stones; the town to furnish the carriage of the stones and the sand; the price of the work was at the rate of thirty shillings Scots per rood. Previously to this the street had been partially paved in a rude fashion with cobble stones. This one and only street was, nay still is, a source of anxiety to the civic authorities. In 1486, complaint having been made of the "open-air merchants" (their kindred are to be seen daily in Leather-lane and the New-cut) it was decreed that no manner of person, freeman or unfree, should hold or use any crames (stalls) or boards upon the street or beneath the outside stairs, under heavy penalties culminating in the loss of freedom if free, and banishment from the city for a year and a day. Daily and sometimes nightly the street and the closes were promenaded by gangs of swine in search of offal and unconsidered trifles, and to stop the nuisance the lockman was to seize and keep the errant pigs till their owners redeemed them with a fine. In 1505 Thomas Glendunwyne was appointed head scavenger. The said Thomas was to have "a horse with a close-cart, and two servants daily, when need is [when was it not?] for purgeing and clenging of the Hie Streitt of all manner of muck, filth of fish and flesh, and rubbish wet and dry, and remove the same to a certain place, and appropriate the same to his own profit and use." To assist the cleaning a small tax was levied on booth-keepers, hucksters, and those who carried on business in the front basement of their houses. Thomas, who was also town-crier, passes from the scene, and Thomas Johnstoune and John Brown succeed to his bell and broom. Their cleansing capabilities are greatly increased. The number of servants, horses, and close carts is doubled, and wheel-barrows, for the first time, are added to the plant, along with other "needful instruments." Candle-makers were forbidden to melt tallow in front of their houses; skinners and furriers were not permitted to hang their skins on the fore-stairs, nor throw them on the Hie-gait; nor could cloth dampers and dyers dry their cloths outside their houses. In 1525, the "gait-dichting" (street cleansing) is let, "if death or war do not interfere,"—it was a stormy period then for Scotland, and more especialy for its capital, because "our natural enemies, the English," were either crossing the Border or threatening to do so,—"to Alexander Pennycuke, for the sum of 23*l.* Scots." In 1543 the Hie-gait is "up," for Morris Crawford has contracted to lay the entire causeway. In 1547 the magistrates published a statute which might well apply to London and other towns at the present day: "All manner of persons within this burgh that has any cairns [heaps of stones], building-tackle, or other stuff, on the Hie-gait, that has completed their work, or are not prepared to begin immediately, that they remove the same, under the penalty of forty shillings." In the following year middens were ordered to be removed from the street, and every "nichtbour" on every Saturday evening had to cleanse the portion of the street in front of his house, under a penalty of 8s. Scots each time he "failed."

The 16th of November, 1554, was a great day, and also a great night, for Edinburgh; for on that day it was ordained by the Provost and Council that "in consequence of the rogues and vagabonds that go about in the dark hours stealing and plundering," the city should, until the 24th of February "nextocum," be lighted up from five in the evening until two a.m.; and this is how the illumination was to be accomplished:—Every barber, candlemaker, baker, cook-shop keeper, apothecary, and tavern-keeper was to show a light in front of his booth and tavern; so also were the brewers in the closes, and the inhabitants of the close were each in turn to hang out a lantern; and, legislating for probabilities and possibilities, it was also ordained,—"When it happens two candle-makers, barbers, apothecaries, taverners, bakers, and cooks dwell together, the magistrates shall put one of the two lanterns to such other place as they shall please devise."

Over and over again is the Hie-gait up, and the cares of magistrates are increasing apace, for the Cow-gait lying in the hollow to the south is (1563) in process of being paved. In that year we find the city treasurer ordering that 3*l.* 16s. Scots be paid to the causeway-makers for 2 roods 4 ells of causeway laid down before "the Cardinal's lodging in the Cow-gait." This lodging was best known afterwards as Cardinal Beaton's Palace, the corner tower of which was the quaintest remnant of ancient domestic architecture in Edinburgh, so quaint and so picturesque that the beholder was carried back in imagination to the Paris of the Middle Ages. This gem of antiquity was, shall it be said, ruthlessly swept away less than a score of years ago. Professor Daniel Wilson, of Toronto, in his book on ancient Edinburgh, gives a drawing and a concise description of the palace.

One of the many street nuisances that had to be treated with a high hand was the tribe of roughs who abounded then as now. One of their favourite pastimes was a "bikker," or stone-throwing battle, in which they pelted each other, and occasionally the peacefully-disposed inhabitants, sometimes to the death. In 1567 it was decreed and ordained that those who indulged in such cruel pastime should, if they were of age, be hanged, and, if under age, should be scourged. Yet, in spite of all the severe enactments against "bikkering," the rough sport lasted until the school days of Sir Walter Scott, and had nearly died out about forty years ago, when a bikker between the boys of the High School and the Canongate "keelies" (roughs) was a weekly event. In Lockhart's Life of Sir Walter Scott particular mention is made of "Green Breeks," a leader and captain of the "bikkeraris."

It is an axiom that no sanitary work can be carried on without an abundant supply of fresh water. In these days the supply of this element was somewhat deficient in Edinburgh. The inhabitants were dependent on the draw-wells, and these were continually getting out of order, so much so that we find ever and again the magistrates issuing orders of the following pattern:—"Alexander Park, treasurer, is, with all diligence possible, to put to (?) workmen for the building of the Moose well and cleaning of the new well, flagging and mending of the causeways before them." On the north side of the town was a collection of water called the Nor' Loch, but so polluted with sewage as to be unfit for domestic purposes; and on the south, but nearly a mile distant, was the Burgh Loch, which was inconvenient, and in war-time unavailable as a water-supply. In consequence of the increase of the numbers of the inhabitants, the brewers were forbidden to use the well-water, and so betook themselves to the Burgh Loch. This loch greatly exercised the magistrates, especially on the 17th of January, 1555, when "the provost, bailies, and council ordains for causes and considerations moving them . . . . . the Borrow Loch to be let forth, and the dyke thereof sloped, so that it may run where it ran before until the Feast of Pasche next to come, and then" ("There is much virtue in an 'if,'" says Shakspeare,—but in a *then*),—"and then" (to resume the quotation) "ordains new consideration to be taken whether the same be let forth or held in as it is now." What could have been the "causes and considerations" that prompted such a decree? This loch lay in the hollow of the Burgh Moor, where, among other notable things, the Scottish army mustered before its march to Flodden. The waters were not "let forth," for in 1583 a proposal is made to and accepted by the town council for supplying the Cowgate with water from the Burgh Loch. A street named Windmill-street memorialises the machinery used in raising the water. In after-years, however, its waters were "let forth" for good and all, and the hollow they occupied is now known as the Meadows, the most delightful of the tree-shaded promenades of Edinburgh.

Not having an abundant supply of water, the authorities did as best they could; but they only saw half-way. The skinners and cloth dampers were continually using water, and such water having done its duty was not to be emptied into the street or close until after daylight, and not until after daylight was the cleaner of tripe and other "intestinal arrangements" permitted to pour his liquid abominations into the street. Why should the atmosphere of night have been loaded with unsavoury perfumes? The only thing approaching to an explanation of the question is that even up to the present time there are spots in Edinburgh which, after dark, are, for nasal reasons, impassable.

Many local Acts were passed regarding the drains and closets. One will stand as a sample for all. The spelling is slightly modernised. "Item, it is statute and ordanit that all personis that has scheildis [drains] clenge the same or ever they be full, so that they break not forth and run into the streit, under the penalty of 18s. to be taken of them to whom the scheildis pertanis; and, attour [moreover] if any personis happens to open their closets in a greit weit [heavy downfall of rain], so that their scheildis run alongst the street, the *tenement* shall be poindit [distrained] to the amount of 18s. And no persons shall hold their closets open, leaking and running furth, but honestly covered, under said penalty of 18s. And when any scheildis is clenged that the same clenger carry the same honestly and quietly in the night, and leave nothing to pollute the street therewith."

The magistrates exercised a strict jurisdiction over food. Very heavy were the penalties imposed on those who gave short weight or measure, heavier still the punishment inflicted on the brewer who adulterated his ale, and still more heavy that which befel the dealer in unwholesome flesh or fish. It must be here stated that in those days all traders were craftsmen and members of companies. So far

back as 1488 it was enacted "that the dekyn (Dean of Guild) and the best of the craft search the craft if any of them either buys, sells, or slays any infected flesh or fish, or keeps diseased or starved cattle, or sells the flesh of cattle that have died of disease, or 'poor' fish or flesh, he shall be deprived of his freedom, his goods shall be sold for the benefit of the sick, and he himself BANISHED FROM THE TOWN FOR EVERMORE." Tell not this in Smithfield; whisper it not in the fields of Copenhagen, or the stalls of Billingsgate!

The business of the Dean of Guild Court in those days may be likened to the Board of Works and the Commissioners of Sewers rolled into one. All their work had to be done personally, and their appointments were the reverse of sinecures.

THE SELF-EDUCATION OF THE YOUNG ARCHITECT.

PRESIDENT'S ADDRESS, ARCHITECTURAL ASSOCIATION.

THE inaugural address given by Mr. H. L. Florence, the president of the Architectural Association, at the first general meeting of the session held on the 8th inst., dealt almost exclusively with the means available by the young architect, more especially in London, for self-education. In an interesting auto-biographical sketch, he showed how the facilities afforded by the Association might be taken advantage of to a much greater extent than is general amongst its members, and after dwelling upon matters strictly pertaining to the internal economy of the Association, he went on to say:—

If we, one and all, are to take our part and share in the great object of raising and supporting the dignity of our profession, there must be a common bond and tie between us, and in this I do not allude to what we so often hear of as "*esprit de corps*," but rather to that great and general principle, that the architect, before all and in all, must be an artist. In this lies the pleasure in his work which he should feel, and without which it will be dull and lifeless. In this ever-striving towards an ideal excellence, in this ceaseless struggle with material obstacles, there is no room for apathy, indifference, or sloth. Each will recognise his fellow-student as his brother in art, and be ready to aid him should he slacken or falter, to encourage him should he fail, and to rejoice with him in his success. In no other motive can we find that pleasure in our work which preserves it from the formality of custom, and by no other claim will its reputation survive us. Sooner or later that is the standard by which we must be judged, and even from a worldly point of view it has proved often the most successful. It must also be considered that it is this quality of art alone which defines the architect. He may be skilled in science and construction, able in business,—he may even have taste and judgment; but it is the presence of art in his work which gives it that indefinable charm by which we recognise it as an architect's. If, then, this quality in our work is to be our object, it is evident that the standard of the work done here must be raised, for the quality will only come by study. Genius has been well said to be the capacity for taking pains, and there is much truth in this remark. We shall find that a comparatively simple design will, on examination, show far more thought in proportion, refinement of detail, and just balance of ornament, than a showy conventional drawing in which neither the mind nor the heart of the designer has had any share. Thus by thoughtful rather than by brilliant work you will not only raise the general standard of merit in this Association, but also develope that faculty of fitness and reticence which will be invaluable in after-life. Do not think that in thus bringing the quality of art before you as a practical means to a definite end I am encouraging what I may term the art "cant," the fashion of the day. It is easy to talk art, to preach the gospel of red brick, blue china, new furniture, and old embroidery,—an art which luxuriates in cut festoons and turned posts on the ground floor, and reaches its climax in a tile-hung upper story. All these things are signs of "taste," of fancy, or of fashion; but art is of no period, is independent of all fashions, and, in truth, does not consist in outward adornment, but rather in the living presence of the designer's thought. If I have succeeded in expressing myself clearly, you will have seen that I have impressed upon you the duty of serving the Association in three separate forms,—by study in the classes, by taking part in the management and discussions, and by cultivation of the artistic instinct, which broadly includes draughtsmanship. It is not by accident or chance that I have made this division. In my remarks* on the evening of our *conversazione*, I pointed out that the architect had to work in three capacities,—as a man of science and a constructor (corresponding with our classes), as a man of business (linked with the management and discussions of our society), and thirdly, as an artist. Thus the three great lines along which an architect has to travel in practice are precisely those which the teaching and system of this Association best prepare him for. An architect's education cannot, however, be entirely carried on within these rooms. He has sufficient opportunities, in the office in which he is articled, to attain a certain proficiency in draughtsmanship and a general knowledge of at least the rudiments of construction and archæology. There is one danger into which a student at this stage of his career is very prone to fall. He has naturally but little experience, and therefore is only too ready to criticise rashly the works of others, and to despise the long and laborious course of study recommended for his future. He will be regardless of the discipline obtained by the careful study of the antique, and but too ready to believe that originality will result from his own experiments rather than develope from his slowly-increasing knowledge. We may here take a lesson from our fellow-students in America. My friend Mr. Longfellow, the editor of the *American Architect*, writes upon this subject:—

"It is safe to say that as a rule the men who have been most successful in originality have been those who have been most studious of precedent and most rigorously trained, because thus they have gained the sureness of hand which has saved them both from timidity and from disaster when they were at their own guidance. This is true in a greater degree of nations. The architects who in this century have shown the most original power are unquestionably the most systematic, the most academic, in training,—the French. It is because they have acquired their power by the best means of discipline the world now affords architects, and the discipline of the most formal being based entirely on study of the antique. It is particularly noticeable that they have been bolder, more characteristic and straightforward, less conventional, and more successful artistically, than any others in the handling of the untried material, iron. The unconventional American has thus far found nothing better to do with his iron than to work it into clumsy and shame-faced imitations of stone and wood. The Frenchman, slave of his schools and his precedents, developes it into forms unseen before, and clearly expressive of its exceptional qualities. In like manner, it is not the engineer or the mechanic, when he undertakes to add decoration to his work, untrammelled as he is by artistic prejudice, who shows most originality or straightforwardness in ornamental treatment, to say nothing of other excellences. It is the well-trained designer, and this because he only has acquired by discipline the artistic sense of fitness which can show him the incongruity of old forms in new materials, and teach him to modify or replace them for new conditions. We can see no reason, then, why Americans should feel concerned about originality. It is one of the qualities which always disappoint a direct pursuit. From a disciplined hand it comes without direct effort, if it comes at all; from the undisciplined, it is too likely to mean only the fantastic."

Bearing this in mind, he must, then, endeavour to reach a higher degree of excellence in drawing, to take up the study of literature,—not only that referring to our art, but also in subjects of wider interest,—and to perfect himself in the acquisition of a foreign tongue, French being the most generally useful to him. In regard to the first subject, drawing, I well remember Mr. Roger Smith, in one of the first papers I heard at this Association, paraphrase the language of Demosthenes as to action in oratory by saying the three essentials of an architect were: firstly, drawing; secondly, drawing; and thirdly, drawing. If I cannot go quite so far as this, there is no doubt that it is a necessity that an architect should be able to draw freely and well. But the acquisition of this power demands time and practice, and often the aid of some stimulus to exertion. I know of no easier means of obtaining this desirable result than the frequent practice of sketching, measuring, and drawing-out existing buildings. This teaches at once proportion, exactitude, and manual dexterity. The use of the brush conjointly with the pen or pencil will do much to counteract any disposition to mannerism, in addition to its value as an artistic form of expression. Another excellent aid in this respect is the preparation of drawings to be submitted in competition for the prizes offered by this or other societies, and I may here refer to what I hope will be one of the most successful features of this session, the founding of the Association Medal, to be awarded every year, in conjunction with a prize value five guineas, in books, to the author of the best design for a given subject chosen by the committee. The unprecedented lack of interest shown by members, as evidenced by the fact that only one design was sent in in response to the invitations of our prize list, has been the means of attracting special attention to this point, and it has been felt that a medal, at once an honour to receive and a lasting memorial of success, would be the best means of rousing a more lively spirit of emulation. As it is most probable that the honour of obtaining the first medal given by this Association will attract a large number of competitors, and that many designs will present features of special excellence, I shall have the pleasure of adding an additional prize, to be awarded to the design placed by the judges second in order of merit. The prizes given by the Association and the Architectural Union Company for measured drawings have always hitherto proved most attractive, and the works themselves have been of great assistance to the Sketch Book Committee. A similar accident, it may be supposed, led to a comparatively small number of the London members joining the annual excursion. . . . . In mentioning drawing to you just now, I named with it the study of literature, not merely architectural, but general, in order that you may be sufficiently instructed in the various branches of science, art, history, and topics referring to the passing interests of the day. You will have to meet, in your clients, and at all stages of your professional life, many with whom you must be something more than the man of business, or even the artist, and a want of general culture will tell fatally against you if you are found deficient. I cannot better illustrate my meaning than by a reference to the life of one whose loss I, as a friend and pupil, most deeply deplore,—I mean the late Frederick Pepys Cockerell, who so consistently carried out his father's precept to be "an artist among gentlemen, and a gentleman among artists." A habit of reading will prove of the greatest advantage to you in this respect, and be a relief from your other studies. In regard to the choice of books, much must be left to the taste of the reader, but it may be suggested that it is not advisable to try and kill two birds with one stone. Thus, an attempt to study the spoken French of everyday life by reading the "Dictionnaire" of Viollet-le-Duc, admirably written as it is, would prove a delusion; a good novel would suit your purpose much better, while the endeavour to make books serve the purposes of actual inspection of buildings would cause you great difficulties when you come to execute works of your own. But in regard to your reading, I may quote the words of Bacon:

"Read not to contradict or confute; nor to believe and take for granted; nor to find talk and discourse; but to weigh and consider. Some books are to be tasted, others to be swallowed, and some few to be chewed and digested."

It is for our members to exercise an influence for good or for evil upon our future, and unless the tie of a common interest and share in the duties which each assumes in joining is felt by all, our strength will prove our weakness, and we, losing our cohesion and our unity, may break and fall. It is this view that I take which prompts me to hope that the session may be one which will settle more surely the foundations of the Association upon their ancient lines,—one which will remedy defects and imperfections, rather than launch out into new enterprises and ventures, and this, not from opposition to new ideas or concession to prejudices, but with the intent that should the need for such change arise we may be prepared to meet it without fear, that our well-tested strength may incorporate the new to widen and extend the boundaries of the old,—when, to parody Tennyson,

"Freedom broadens slowly down,
From President to President."

* Reported in *Builder*, p. 1150, *ante*.

Church-building.—The Rev. C. A. Belli, who was for fifty-three years vicar of South Weald, near Brentwood, and who resigned the living a short time ago, has given a sum of 12,000*l*. towards the building of a church and its endowment, and for the erection of a parsonage-house, at Bentley, an outlying district of South Weald parish. Mr. O. E. Coope, M.P., who resides in the neighbourhood, has subscribed 2,000*l*. for the same objects, and a site for the buildings has been presented by Mr. C. J. Hume Tower.

THE ARCHITECTURAL ASSOCIATION.

THE first ordinary general meeting of this Association for the session 1878-79 was held on the 8th inst. in the meeting-room of the Royal Institute of British Architects, Conduit-street, Mr. H. L. Florence, president, in the chair. Upwards of sixty new members were nominated for election.

Votes of thanks were given to Messrs. Gillow, Jeffrey, Streeter, and the other gentlemen who had lent objects for exhibition at the opening *conversazione* of the Association; also to the Entertainments Sub-committee, though not without reference to the break-down of the cloak-room arrangements.

The *Annual Report of the Association* for the past session, which was unanimously adopted, contains the following passages:—

"During the past session no less than 106 new members were enrolled, and many of these gentlemen entered actively into the work of the session.

The financial position of the Association is highly satisfactory.

The classes have generally been well attended, but the committee would urge upon the younger members the necessity of interesting themselves in this branch of the Association's work. The committee would remind members that the great principle of the Association is *mutual help*, and that it is not by the attendance at the ordinary meetings only that this principle can be fully carried out.

The library has been used by as large a number of members as in any former session, and several additions have been made. The committee, however, cannot but remark the diminution in the number of donations, and would remind members of this excellent means of disposing of their surplus copies.

The Saturday afternoon visits have, on the whole, been well attended.

The annual excursion, under the direction of Mr. Fowler, of Louth, took place this year in the South-East portion of Yorkshire,—a district selected by the late Mr. Sharpe. A very pleasant and instructive week was spent, and the success of the excursion was mainly due to the exertions of Mr. Fowler and the sub-committee.

The Birmingham branch has had a successful session, and its members have participated to a considerable extent in the work of the classes, whilst they have not been unmindful of the advantages of the library.

The Architects' Benevolent Society has need of further support, and the committee feel that it is only necessary to mention the fact to secure the attention of members."

Mr. J. Douglass Mathews, the treasurer, moved the adoption of the balance-sheet, together with a vote of thanks to the auditors, Messrs. T. E. Mundy and F. Hennings. The total receipts (including a balance of 88*l.* 18s. 4d. remaining in hand at the end of the previous session) amounted to 534*l.* 13s. 4d., and the total expenditure to 429*l.* 9s. 2d., leaving a balance in the treasurer's hands of 105*l.* 4s. 2d.

The *Librarian*, Mr. R. E. Pownall, submitted the report of the library sub-committee, who state that the use made of the library during the past session has been greater than during previous ones, the average number of works taken out on each of the thirty-three occasions on which it was open being forty-five, and the total number of individual borrowers being between 120 and 130. Eight country members have availed themselves of the regulations made in their behalf. The total number of works in the library is now upwards of 600, in nearly 900 volumes. The total receipts, including a grant of 25*l.* by the Committee of the Association, and a balance of 14*l.* 14s. 6d. brought forward from last year's account amounted to 44*l.* 6s. 6d., and the expenditure (including 30*l.* 8s. 3d. for new books) was 37*l.* 1s., leaving a balance of 7*l.* 5s. 6d. in the hands of the librarian.

The *Class of Design* report was by no means a favourable one:—

"Great care was taken in the preparation of the syllabus, very attractive and useful subjects being chosen, and at the first three meetings it seemed as though the efforts made were to be successful. But before the present year was reached the attendance of members and the number of designs submitted were considerably reduced. A comparison of the first and fourth meetings will show how much this was the case:—First meeting, fourteen sets of designs; fourth meeting, seven sets. Thus the work of the class was reduced by one-half in the short period of six weeks. The class was continued to the end of the session with extreme difficulty and a constant diminution of work and attendance. Under these circumstances the majority of those present at the concluding meeting considered that it would be absurd to make any arrangements for the ensuing session unless a greater amount of interest was evinced, and they decided not to elect any officers, the president remarking that if, during the recess, a sufficient number of gentlemen chose to start the class afresh, they would have every assistance in so doing."

The *Elementary Class of Design*, on the contrary, presented a very satisfactory report; for, while the average attendance at the meetings during session 1876-77 was 10, during the past session it was 21, the average number of drawings submitted at each meeting during the same two sessions being 8 and 17 respectively.

The report of the *Class for the Study of Colour Decoration* stated that there were eight meetings held at alternate intervals of a month and a fortnight, at which 59 members attended, contributing 26 sketches, and several papers were read, some being illustrated by colour sketches.

The *Class for the Study of Architectural Science* presented a report stating that its work during the past session was not altogether successful. Eight papers were read and discussed.

The secretaries of the *Class of Construction and Practice* reported that the work of the class for the past session compared favourably with that of the two previous ones in all respects.

The President then proceeded to deliver his inaugural address, of which we give some portions on another page.

A brief discussion ensued, in the course of which Mr. J. S. Quilter, honorary secretary to the Sharpe Memorial Committee, reported progress. The reports of the various classes, &c., were adopted, and a vote of thanks was accorded to the President for his address.

FREDERICK PEPYS COCKERELL.

THE late Honorary Secretary of the Royal Institute of British Architects, whose sudden and premature death occurred in Paris on the 4th inst., was the son of Professor Charles Robert Cockerell, the distinguished architect and Royal Academician who was the first professional president of the Royal Institute of British Architects, succeeding in that post the late Earl de Grey, about the time when the society went into new head-quarters in Conduit-street. Descended on his father's side from Paulina, sister of Samuel Pepys, the excellent Secretary to the Admiralty under Charles II., Frederick Cockerell was, through his mother, a grandson of Sir John Rennie, who, in 1831, finished the present London Bridge. A pupil of Mr. Philip Hardwick, he left that gentleman's office in 1855 in order to continue his education on the Continent, and his studies in Paris exercised a ruling influence in the composition of his future designs and executed works. Making as he did the grand tour at a time when the world was not overwhelmed with photographic reproductions, his sketches and finished drawings of the ancient masterpieces accumulated with a will and to some purpose. Not long after his return to England he read a paper at the Institute on the "Architectural Accessories of Monumental Sculpture," — a paper which evinced learning and refinement, and at the same time offered practical suggestions, such as English sculptors are tardily adopting. In the discussion upon it, Professor Donaldson and the conductor of this journal joined in merited congratulations to its author. Mr. Cockerell's practice, never considerable, but always good, and largely composed of business executed for his personal friends, began about this period. One of his earliest works is the Freemasons' Hall, the façade of which in Great Queen-street possesses originality and refinement. A view and description, with a plan of the principal floor, was published in the *Builder*. We pointed out then the elegance of the details, and can now only repeat our regret, that the present exterior of the Freemasons' Hall should have been erected when its many beauties were neither appreciated nor understood. This successful achievement in Great Queen-street so recommended him to the notice of the Grand Lodge that he was invited to fulfil Masonic duties of a congenial character. He was made "Grand Superintendent of Works,"—an officer of the Grand Lodge who has to advise on all plans of buildings undertaken by the Grand Lodge, and to report periodically on the state of the different edifices belonging to them. This office was filled by him until his death, although it is one involving annual election, and at the best usually held for only a few years. At the beginning of 1867 Mr. Cockerell prepared designs for a new National Gallery, which were submitted in competition with those of some of his elder professional brethren.

We are enabled to append a list of some of the buildings executed from his designs and under his immediate superintendence. Photographs and drawings of some of them formed part of the English Exhibition (just closed) of Architecture on the Champ de Mars; nor were they the least remarked in a room which, during the last few months, has attracted the admiration and praise of more than one celebrated European architect. The following necessarily imperfect catalogue of buildings and monuments includes works both of alteration and addition; all, however, are of comparatively recent execution, viz.:—

Freemasons' Hall and Tavern;* Crayley-Court, near Winchester (Mr. Adam Kennard); Down Hall, Harlow, Essex (Sir H. Selwin-Ibbetson, bart.); Ballards, Croydon; Foxholes, Christchurch, Hants (Mr. H. Reeves); Lythehill, Haslemere, Surrey (Mr. Stewart Hodgson); Woodcote Hall, Newport, Salop (Mr. C. C. Cotes, M.P.); Clonalis, Roscommon, Ireland (The O'Conor Don, M.P.); Burgate, Godalming, Surrey (Mr. J. Godman); Kidbrooke Park, East Grinstead (Mr. Freshfield); Condover Hall, Shrewsbury (Mr. R. Cholmondeley); Langley Park, Slough (Sir R. B. Harvey, M.P.); St. John's Church, Hampstead; Vicar's Hill, Lymington (Mr. E.H. Pember); Cranesden, Mayfield, Sussex (Mr. T. Woolner, R.A.); Little Holland House, Kensington (Mr. G. F. Watts, R.A.); Castle Hill, Cerne Abbas, Dorset (Sir G. Clay, bart.); Memorial Column at Langley Park, Slough; Tablet in memory of Professor Cockerell at St. Paul's; Schools and Chapel at Highgate (Sir R. Cholmondeley); Façade of the Society of Painters in Water Colours†; Carlisle Memorial Column, Castle Howard,‡ &c.

Mr. Cockerell was a trustee of Sir John Soane's Museum, and he had been lately chosen assessor for the Spa Buildings belonging to the Scarborough Cliff Bridge Company. He was engaged at the time of his death upon several designs and works of importance, of which it is unnecessary to speak.

Though he never interfered in what may be called the polemics of art, never writing in the professional journals, and, indeed, seldom reading any of them, he took a quiet interest in passing events, and in none more than those which have occurred within the fabric of St. Paul's. The vexed question of the decoration of our metropolitan cathedral, and the still more vexed manner in which it was debated, he passed over in silence; but the report of a sub-committee published some six months ago in the *Times* drew from him a letter, which appeared in that journal on the 21st of July last, and which introduced an argument against the introduction of brilliant mosaics in the dome. The sub-committee urged that, as the dome of St. Paul's was badly lighted, it was necessary to use gold grounds and bright colours in order that people below might be able to see the decoration. Mr. Cockerell, who doubtless had often wandered with his father through the cheerless building, replied that the sub-committee, while assuming the existence of a defect, proposed to produce a real defect of a radical and destructive kind. His words are well worth repeating, and are likely to be read with more attention now that their author is dead:—"We are so accustomed," said he, "to abuse the atmosphere of London that we have come to overlook the cardinal merit it possesses of lending by its haze an artificial distance, and thereby conferring on such a building as St. Paul's an apparent size which it does not in reality possess. Those who have long frequented and loved St. Paul's will painfully remember the disastrous sensation of loss of space which they experienced on first seeing the restored paintings of Sir James Thornhill some twenty-five years ago. If even a monochrome (perhaps a little hot in tone) produced such an effect, what may be expected of the bright colours which, by piercing the friendly haze, will rob the dome of half its space? It is worth considering whether a sufficiently decorative effect may not be obtained without loss of scale by the use of aërial tints, even of a monochrome, for which the grey-blue treatment of the Limoges enamels (with perhaps an increased proportion of gold) might offer valuable suggestions."

Cockerell's last days were attended with circumstances in which some of his French colleagues had a melancholy share. Invited for the very day of his death to a dinner party at the house of M. Duc, the architect in chief to the new Palais de Justice, his host waited long only to receive the shock of the sad news; and the "Fabs," a well-known and exclusive club, were to have dined at Cockerell's house on the very night that sorrowful friends were journeying to Paris to attend his funeral, which was solemnised in Paris at a small English church in the Avenue Marbœuf, off the Champs Elysées, and not far from the Arc de Triomphe. The interment took place at Auteuil, a suburb of Paris, and the body was followed by—besides several members

* See *Builder*, 1866, pp. 611—613.
† See *Builder*, 1875, p. 371.
‡ See *Builder*, 1870, p. 347.

of the family and two representatives of the Royal Institute of British Architects,—M. Duc, M. Lefuel, M. Hardy, M. Pellechet, M. Daumet, and M. Vaudremer, colleagues and friends, with two English architects who happened to be staying in Paris at the time.

The coffin, lowered in the grave, was covered with wreaths, bouquets, and single flowers,—the last sent by his children; most of the flowers were brought over from England for the purpose. A widow and six young children remain to deplore his untimely loss.

Fred. P. Cockerell, as his name has been so often printed in our pages, was elected an Associate of the Royal Institute of British Architects in 1860, and a Fellow on the 30th of May, 1864. He was made the honorary secretary in 1871, and during the years that he served no man ever did less to court or encourage the popularity he enjoyed. A would-be opponent of his might wage political battle at a distance; immediate contact with him sufficed to disarm opposition. A colleague was attracted by the irresistible charm of a presence thoroughly natural, and of an expression perfectly sincere. The incorporated society, which proposes to ensure professional integrity and to enjoin uniformity of professional practice, was fittingly represented by one who, though he took apparently little part in the business of the secretaries' duties, made his constant presence at meetings of the Council, especially during the last session, a cause of satisfaction and confidence. Indeed, latterly he took more than ordinary interest in the organisation of Institute business, feeling convinced that all such work should emanate from the office in Conduit-street, for which purpose he arranged to attend there at other times than during the Council meetings. It will be difficult to find a successor, we may say almost impossible to immediately obtain another man combining the same qualities. As far as it is useful to judge at present, the next honorary secretary of the Institute must be either an architect of independent position, not wholly occupied in business, well known in the art-world, and an accomplished host, a traveller and a linguist; or he must be one of strict business habits, able to devote time to visiting scattered honorary members on the Continent, collecting valuable information from them, and willing to assist in the increasing business of the secretariat. In the latter case the right man may, with the exercise of discrimination, be found; in the former it will be necessary to look far and wide, and to wait long, before choosing a successor to the high-minded gentleman that is gone.

Assyrian Bronzes.—The remarkable objects in bronze discovered by Mr. Rassam at Balawat, and now in the British Museum, and which have been hitherto described as trophies, have been identified as belonging to two pairs of gates. The merit of the identification belongs to Mr. Ready, the skilled artificer attached to the British Museum department, to whose province it belonged to cleanse the bronze fragments, to piece them together, and to nail them with the original nails upon wood of the same thickness as had been used for the purpose when this unique monument was first set up about twenty-eight centuries ago. He then began to see that the larger set of bronze plates formed the coverings of a pair of enormous folding-doors rectangularly shaped. Each leaf was about 22 ft. long and 6 ft. broad. They had evidently turned on pivots, which had actually reached the Museum, although the sockets in which they moved had unfortunately been left behind. At the top they were supported by strong rings fixed in the masonry. The body of the door was of wood 3 in. in thickness, as measured by the nails used by the Assyrians to nail the plates of bronze on the wood; for these nails were clinched just one-sixteenth of an inch, which is the thickness of the plates themselves, over and above 3 in. from their heads. Each door turned on a circular post about 1 ft. thick. Around the doorpost the bronze plates, 8 ft. long in all, lapped to the extent of 2 ft., leaving 6 ft. as the width of each door between its post and its "style." This style was also edged with bronze, the vertical inscription furnishing the text, to which the designs in *repoussé* work on the horizontal plates, representing Shalmaneser's battles, sieges, triumphal processions, the cruelties inflicted on his foes, and his worship of the gods, supplied the illustrative scenes. The inscription leaves no doubt as to the monarch whose history is recorded.

ON THE FUTURE OF ENGLISH ART.

From treating on knowledge and principle, we pass to the *technique* of the Fine Arts, more especially to that of painting. No one can compare modern pictures with those by the old masters without being struck with the totally different methods of execution. In those by the old masters you are scarcely conscious of paint; you do not see how their work was done; but modern pictures are unmistakably paint, and of the paint painty. There they are, for the most part groaning under flake-white freely plastered all over them. A rough wall and a gravel walk are the textures, the ideal surfaces, which your modern painter swears by, and which he endeavours to imitate from the exuberance of his paint-pot. In the works of the old masters you may, it is true, now and then see the high lights emphasised, by being embossed in paint, but in the picturesque Dutch, rather than in the great schools of design, and even then within well-defined limits, and with the greatest possible care and skill. White is not, even in the preparatory painting of the old masters, indiscriminately trowelled on with brush and palette-knife, and all over the canvas. We knew a painter, a very prodigal of paint, who wasted this substance in riotous painting, and who was once quizzically asked by a sly critic, "if he threw his brushes at the canvas." To soften the impertinence, however, the interlocutor immediately added, "because if you did you hit it in the right places." We knew that these complimentary words were but salve for the piercing ones, and that the brushes which were assumed to be thrown at the canvas were anything but unerring. The skilful old masters did sometimes, as we have said, *hit* their pictures here and there with a full brush, and in the right places. When they did indulge in thick painting, however, it will be found that there was gradation from the peaks of extreme emboss into the vales and depths of transparent shade. But even these special and emphatic touches, in *impasti*, do not savour of flake-white as in the modern picture. For long experience had taught the old masters that brilliancy in oil-painting was not to be attained by mixing colours with opaque lead white, and by plastering such masses of spoiled pigments on canvasses. They had learnt that the painter's opaque white was his only and very poor substitute for light, and that to mix a beautiful pigment with this white was to destroy and corrupt it into a leaden gray. They had observed that some of the richest and most brilliant colours could not by any possibility be approached by mixing pigments with white. They saw, too, especially in Venice, that the rich jewelry of colour of gems and of painted glass was the most brilliant, and from this they reasoned that that brilliancy and richness which they so much admired in gems and in glass was due to the light passing through the transparent pigment. From this conclusion they hypotheticated a process of painting in which their white pigment should stand to their oil colours in the same relation as light itself does in the colour effects of gems and of glass. They had discerned that it should not be mixed with their pigments, but that it should shine through these if they desired to obtain the greatest splendour of effect. To the practice founded upon this hypothesis is due the greater brilliancy, richness, and unpaintiness of the works of the old masters, as compared with those of the moderns. The traditions of the *technique* of the old times were gradually lost, and we have again to work out this important method for ourselves.

The first impulse of the student on apprehending the force of the foregoing reasoning is, that he will, for the future, altogether discard flake-white. This, however, would not answer, for the transparent colours are too intractable when used pure over a white ground; they cannot thus be solidly and effectively worked. We cannot discard the opaque white pigment; it must form our ground, and, to a certain extent, our *vehicle* and our modelling material. But whilst we are enforcing the adoption of the ancient method of painting, we are perfectly well aware that it is a slow process; it is not a process by which a *picture* can be dashed off. It is, therefore, ill adapted to the drive and hurry-scurry of the painters of the present day. But, perhaps, this is one great reason why its adoption should be moved, for the process might tend to correct the vicious haste we are condemning.

White, then, cannot be altogether dispensed with in painting, if we desire to obtain an entirely satisfactory result. A picture painted wholly in transparent colour is apt to look leathery and flat, though great richness of colour may be obtained. We must, in the first place, use the white for our ground. This ground must be in the main the illuminating power of the picture; it must shine through the greater portion of the picture. It is this shining through of the ground which constitutes transparency in painting. A light colour over a darker colour produces opacity; a dark colour over a lighter produces transparency. In the first case the light is reflected from the surface of the painting; in the second it shines through from the ground. One most important precept to be observed in practising the method of the old masters is that painting one colour over another, that is to say, a lighter over a darker, to obliterate and in order to correct an under painting, is a most pernicious and destructive device. The relative gradations of colour must be laid at once in their proper places, that the ground may shine through them without let or hindrance of intervening mistakes. The necessity which there is in this method that the colours shall be at once laid in their proper places led to the preparation either of cartoons or to the modelling up of a composition, or of a portrait on the canvas, either in a light key or in monochrome, before proceeding to colour. Those emphatic touches of high light, of embosses, to which we have alluded, were given in this preparatory painting. This was the method of Rubens, Vandyke, Rembrandt, &c. It was not, we say, till after the whole design had been worked up in this way in monochrome or in very light greys that richness of colour was attempted. The pigments, as we have stated, are not to be used absolutely pure over this preparatery painting, but worked into a thin film of white first spread over the portion to be painted. The pure pigments can be worked with greater evenness, and can be more easily blended with this film as a vehicle. White mixed in small quantities with the pigments will not mar their transparency or shut out the light of the ground. In the depths of shade a pigment may sometimes, of course, be used perfectly pure. Vermilion, yellow ochre, Naples yellow, emerald green, &c., should be regarded as opaque colours, and therefore be used with as much caution as white itself.

It will be noticed that every step in this method of painting requires to be taken with due deliberation. The painter has to look to the composition, the whiteness, and the dryness of the ground. He must study and complete his design either in a cartoon or upon the canvas before proceeding to colour, and he must be careful to wash every coat of colour before painting over it. We must not, however, be misunderstood. Although we have cautioned the student against *painting out* with a lighter colour, for the purpose of erasure and correction, we do not mean to imply that the same space may not be painted over several times; but, in this case, each painting must be deeper in tone than the preceding. *The progress of this method is from a lighter key to a deeper and a richer one.* For if the superposition of a lighter painting over a darker be attempted, except with the intention of producing opacity, it will immediately nullify the beauty, the transparency, and luminous quality of the process.

The same want of thoroughness of study which we have noticed in respect to painting is as apparent in English sculpture. Drapery is as yet an untried study. As a rule, it is simply abominable, both in our painting and in our sculpture. The only man who understands it finished his education in Munich. The improved course of study we have recommended would effect a reformation in both.

The Royal Academy has very judiciously established a professorship of the Chemistry of the Fine Arts. The permanence of the different pigments requires looking into. The old masters' scale of colours was very much more limited than ours. They were fortunately bound to the most enduring ones, and they made the most of them. But with these we are now incorporating new-fangled hues, not yet sufficiently tested, and which may bring some modern works, wherein they have been recklessly used, to unmitigated destruction.

In proposing that halls of composition should be established in the Royal Academy, we ought also to have suggested that there should be a sculptors' and an architects' hall of composition. The rudiments for such an expansion at present exist; they only require further development to

meet the requirements of the future. It is upon the more thorough education of the artist and of the public that all good things await.

We have now briefly run over those reforms which are needed to render our national art more satisfactory and glorious than it has been. We might have touched upon the *débris* of styles which tend to confuse the designer and the public, but we must leave that to some opportunity in the near future.

METER.

PURE AIR IN THE STABLE.

A CONTRIBUTOR to the *North British Agriculturist*, writing on the importance of pure air in the stable, says that many animals, otherwise tolerably well cared for, are housed in a minimum of cubic space, and in stables, byres, and boxes in which there is no adequate renovation or circulation of air. Alike in town and country, valuable horses, instead of enjoying 1,100 or 1,200 feet of cubic space,—the lowest amount consistent with good health,—are restricted to about one-half this cubic area. The stables connected with many gentlemen's houses do not give more than 700 cubic feet per horse; in many second-rate cab establishments the unfortunate, hard-worked animals are still worse off. In low-roofed urban cowhouses, 200 cubic feet was, a few years ago, the space allotted to each beast, but this cruel overcrowding has recently been considerably abated, by proper inspection, and by the condemnation and pulling down of some of the worst of such hovels.

In building houses for animals, healthful construction does not entail much extra expense, and it invariably saves much sickness and mortality. Even old buildings, when faulty and insufficient, may often be made greatly more healthful by a very moderate, intelligent outlay. There are many farm stables which, when containing their full complement of horses, are found in the morning to be rank and noisome, where the animals suffer from colds, influenza, and weed,—where the colts, when first stabled, are long dull and thriftless. The horses invariably do better when turned to grass or allowed to run, during the summer, in the empty cattle-yards. The mischief is usually found to consist in overcrowding and insufficient ventilation. The stable is probably narrow, usually with a loft overhead; the ceiling is low; any doors or windows are along one side,—there is, hence, no facility for a thorough current of healthful, invigorating air. The obvious remedy is,—at the head of each pair of horses to make an opening in the wall of about 18 in. by 9 in. deep, just underneath the ceiling. It is seldom necessary that such air-holes require to be protected, either by spars, louvre-boards, or iron bars. In winterly weather a wisp of straw prevents the entrance of rain or snow, or of very tempestuous winds. In a large, crowded, low-roofed stable, where doors and windows—as is too commonly the case—are only along one side of the building, it may further be desirable to make an opening (about 9 in. by 4 in.) in the wall underneath the manger, and about 12 in. or 15 in. from the floor, so that it shall not be blocked by the litter.

Capital lofty stables have, in many places, been made underneath the arches of railway stations and viaducts; but from their being closed along one side, and preventing a through current of air and ingress of light, some of them being objectionably dark, they proved decidedly unhealthy. The inmates farthest from the doors were frequently on the sick list; occasionally farcy and even glanders appeared; fresh animals placed in the farther arches soon failed in health. The cause was not difficult to discover. The foul air from the lungs, skin, and excretions of the horses gradually was driven towards the farther recesses; but, having no sufficient exit, it accumulated, causing a damp, pestiferous atmosphere. Openings through the arches farthest from the doors, or air-shafts carried through the roofs, proved the obvious and sufficient remedy. In a few cases where serious disease has persisted for some time, coke fires—on which sulphur and carbolic acid were occasionally thrown,—were kept burning for several days, so as to dry the damp walls and floors, destroy germs of disease, and generally purify the atmosphere.

Still another illustration may be given of the direful effects of impure air on the health of horses. In a populous city, where space was valuable, a large cab proprietor, finding under his premises a bed of sand, made a very good thing by excavating and selling it. The cleared space he subsequently converted into a stable for thirty horses. But owing to the low level of the place effectual drainage was impossible; the urine was collected in a tank at one end of the stable, and was not emptied as frequently as it should have been. Surrounded, and in part overtopped, by other buildings, thorough ventilation was difficult, and was very insufficient. The horses placed in this dark cellar of a stable speedily contributed largely to the sick list; influenza, farcy, and glanders became permanent pests; a good many horses, owing to the darkness and foul air, became blind; two lots of horses died off within three years; when, profiting by dear-bought experience, the premises were converted into storerooms for goods which did not need the renovating supplies of fresh air so essential for living animals.

Facts such as these, and they might be multiplied indefinitely, indicate the need of more intelligent care than is even now disposed on the construction of the dwellings of animals. In building stables, 1,200 cubic feet should be the minimum for each horse. If lofts or rooms overhead cannot be dispensed with, the floor joists should not be put on until the wall is raised 7 ft. 6 in. or 8 ft. from the floor; continuous ventilation should be provided by air shafts of about 2 ft. in diameter, lined with zinc, carried up through the loft or rooms, and surmounted by a cowl, or by louvre boards. In towns, where other property often prevents openings being made in the back walls of the stables, ventilation must depend mainly on these air-shafts, of which one is required for every three horses. In the country, however, abundance of ventilation is usually securable by introducing above the horses' heads, immediately under the ceiling, a window of about 2 ft. by 3 ft. In the better class of stables such windows should be made to open and shut, swinging on a swivel; in farm stables the lower half of the opening is better filled with strong glass, and the upper part with perforated zinc, which, remaining always pervious, is more effectual in allowing egress of foul air than the window, which is too apt to be kept scrupulously closed. In stone walls, immediately underneath the ceiling, intermediate between each window, should also be placed gratings of about 1 ft. by 6 in., the opening protected by a few iron rods. In brick walls a course of perforated bricks should be introduced above the horses' heads, 6 ft. or 7 ft. from the floor; whilst another such course is advantageously placed underneath the manger, 1 ft. or 1 ft. 3 in. from the ground. Objection is sometimes senselessly made to the introduction of light and air in front of horses. It is urged that light annoys horses, and prevents their resting, and that draughts blow down and give colds. But such objections are quite illusory. Horses, and, indeed, all animals, like fresh air. In a box with the half-door open, whether in summer or winter, horses constantly stand or lie with their heads to the opening, luxuriating in the purest, coolest air they can get. They also enjoy a reasonable amount of light; and dark stables, besides being a cloak for dirt, are also a fruitful source of blindness. By introducing fresh air from doors and windows placed in the opposite walls, by gratings distributed above and below, and by perforated walls, the air of stables may be easily kept sweet and pure without draught, and without reducing the temperature below 55 degrees, about which grooms like to keep it.

DOXFORD HALL, NORTHUMBERLAND.

FOR the last eighteen months 100 men have been daily employed in additions and enrichments to Doxford Hall, in the parish of Ellingham, Northumberland. This is the seat of Major Browne, J.P., whose portrait as Master of the Northumberland Foxhounds, in a hunting piece by Mr. Lutjens in this year's exhibition at the Royal Academy, will be fresh in the memory of many of our readers. It is built of white stone, with a Doric portico, and stands on a terrace, partly belted by trees, and situated in a pastoral district, with the sea in the distance on the one hand, and the Cheviot hills on the other, and villages and seats dotted about on the nearer landscape. The extensions now approaching completion consist of various additional features to the house, and accommodation for twenty horses and their grooms in the rear of it. It was, previously, a large substantially-built house, but these additions have quadrupled the area that it covered. On the south front, and before three of the drawing-room windows, a conservatory, orchid-house, and fernery have been erected. On the west front, a billiard-room has been added, 25 ft. by 20 ft., with a bow-window, and additionally lighted from the open-timbered roof, and approached by a corridor about 40 ft. long and 19 ft. wide, furnished with a lavatory and a lobby that gives access to the grounds. The east front has been lengthened northwards by a one-storied wing of kitchens, built with open-timbered roofs, and furnished with hydraulic ranges; and adjoining these are a dairy, dairy-scullery, game-larder, plucking-room, and bakery, paved with cement, and channelled and ventilated; and, departing from the corridor communicating with them is another corridor, at right angles with it, which gives access to the servants' hall and offices of every description; and, beyond these, to a wash-house and laundry, all furnished with every convenience and appliance to save labour and ensure comfort. The story above furnishes twenty new bedrooms. At the end of this receding wing commences the parallelogram, including the stable-yard, which is surrounded by grooms' day-rooms and dormitories, loose-boxes and stalls for twenty horses, a coach-house, 50 ft. long and 28 ft. wide, with a porch before it, saddle and harness rooms, and, at the entrance from the outer gates, a two-storied house for the stud-groom, commanding a view of the whole of the quadrangle. Close by are two outdoor servants' cottages, and a large aviary or chicken-house; and another external feature is a gas-house, from which all the rooms and corridors in the establishment, including the stables, are lighted by gas made according to the patent of the Sun Gas Company, Southwark.

All the chief rooms have been enriched with costly marble mantelpieces and coloured decorations. The approaches have been improved by lowering a rise in the highway, and all the external arrangements carefully considered. The difficulty generally experienced with dealing with sewage has been vanquished by the adoption of two sets of sewers, one for storm-waters, which discharges into a burn, and the other for the sewage, which is conveyed to a tank at a distance to be utilised.

The varied works have been carried out under the direction of the clerk of the works, Mr. John Gray. The masons' work has been executed by Messrs. Gibson, Brownieside; the joiners' work by Messrs. Robertson & Son, Alnwick; the painters' work by Messrs. Adam Robertson & Son, Alnwick and Newcastle; the slating and plastering by Messrs. Thompson & Wright, Alnwick; the plumbing by Messrs. Wilkin & Dickman, Alnwick; and Messrs. Walker & Emley, Newcastle, have furnished the chimneypieces, the hydraulic jack and ranges, the electric bellwork, and the baths. Mr. James Kerr, Alnwick, executed the drainage and sewerage works. Mr. Gray, Chelsea, supplied the conservatories and hot-water apparatus. The cement-floors have been laid down by Messrs. Wilkinson & Co., Newcastle; and the bakery-oven is by Mr. Harris, of Newcastle. The architect is Mr. F. R. Wilson, Alnwick.

THE INSTITUTION OF CIVIL ENGINEERS' PRIZES.

THE council of the Institution of Civil Engineers invite communications, of a complete and comprehensive character, on any of a number of subjects in a published list, as well as on other analogous questions. For approved original communications, the council will be prepared to award premiums, arising out of special funds bequeathed for the purpose. These funds are now large.

Drawing in the Board Schools.—The exhibition of drawings by scholars and pupil-teachers attending the Board schools in London, which has been held in the Saffron-hill Board School, Cross-street, Farringdon-road, was not very exhilarating, including grotesque hares, impossible bridges, and niggling absurdities in every direction. We strongly suspect the mode of teaching adopted, and advise the Board to obtain a report on the subject at once from some thoroughly competent person, so that time may not be lost. We so thoroughly agree with the Board in making drawing part of their scheme of teaching that we are anxious the endeavour should be successful.

PLAN OF THE COLOSSEUM THEATRE, LIVERPOOL.

For the private information of a high official, a plan has been made of the Colosseum Theatre, Liverpool (where during a groundless panic so many lives were recently sacrificed), together with a report by Mr. Thomas Verity, architect. It cannot be other than useful to publish them, and we shall be glad if doing so should lead the owners and occupiers of similar places of public resort throughout the country to consider seriously the facilities for destruction which may exist in their own buildings and the best means of removing them. The briefest examination of the plan and the particulars accompanying it will serve to show all who have given such matters consideration that the "accident" was bound to happen, and that, reasoning on probabilities, it ought to have occurred long before it did.

The house is situated at the corner of Paradise-street and School-lane. It is a large building, octagonal in shape, and consists of pit and two balconies, together capable of holding about 4,000 persons.

The upper balcony is divided into three parts. There are no separate staircases from this to the street, but the occupants pass by three short staircases to the back portion of the lower balcony; these staircases are respectively 2 ft., 1 ft. 4 in., and 1 ft. 10½ in. wide, and the floor on which they land is divided into shallow steps. The only way out for two-thirds of the occupants of the upper balcony, and about half of the lower balcony on the right side (looking towards the stage) is through the bar at the back of the house, with a passageway 12 ft. wide, leading to a doorway, 2 ft. 11 in. wide, immediately at the top of the staircase, where they are met by the people from the other side of the house, who pass through a doorway 3 ft. 4½ in. wide. This staircase is 4 ft. 6 in. wide, and is in two flights, with winders at the turn. So far there are no doors except the dwarf doors in the divisions of the balcony.

An extra exit might be obtained from the bar-room for the people on the right-hand side of the house by a short ascending flight of stairs, leading to a doorway, giving access to a large open well-staircase, in connexion with some billiard and dancing-rooms, but it was understood that it was always fastened, as the premises are not leased with the theatre.

The pit is entered at two points: one from the principal entrance immediately behind the pay-box, A, by a flight of six steps down, along a passage (partly blocked by old iron railings, removed from some part of the house, being stored in it), and up a flight of seven steps to the centre of the pit through dwarf doors, 3 ft. 3½ in. wide, opening outwards. The second entrance, B, which appears to be for the back of the pit, is from the side street (School-lane) by a large double door, only one leaf of which will open, and that inwards, giving an opening of 2 ft. 9 in. to a passage 5 ft. wide, with a flight of five steps up to the pit level at the end.

The usual exit from the pit is by a pair of folding doors, C, opening inwards, in the side-wall adjoining School-lane, on the left side of the house, directly into the street, by a flight of three steps. Inside these doors there has been an enclosed lobby, but the doors have been removed, and the openings left,—four in number,—are respectively 2 ft. 11 in., 2 ft. 2 in., 2 ft. 3 in., and 2 ft. 6 in.

The other exits are by what I have called the second entrance, B, either through the folding doors, D, opening outwards, or from the bar-room at the back of the pit, and by the principal entrance either through the dive, A, under the back part of the pit, or through the bar by an opening 1 ft. 10 in. wide, E.

This opening leads to a lobby about 9 ft. by 7 ft., having two small doors, both opening inwards, F and G, and with steps down leading to each. The door F is 1 ft. 7 in. wide, and leads to the space directly opposite the bottom of the gallery-stairs, from which it is separated by the barrier H, in front of the pay-box, where the disaster occurred. The door G is 2 ft. 2 in. wide, and is just at the top of the stairs from the dive.

The width of the passage at this dive, at the side of the pay-box, is only 2 ft. 9 in., which is further reduced by two of the gallery stairs projecting into the footway 1 ft. 7½ in., leaving a floor-space of 1 ft. 1½ in. The space between the foot of the gallery strirs and the barrier H in front is 2 ft. 2½ in., and the width of the doors on either side of the barrier is, J, 2 ft. 3½ in., and K, 2 ft. 7 in. These doors opened outwards, but only one, K, now remains; no proper provision was made for fastening them back.

At a distance of 4 ft. from these doors there are three steps down to a vestibule, 15 ft. long and 10 ft. wide, with gates at the end opening inwards the full width.

There are also other possible exits by a passage 2 ft. 10 in. wide outside the wall on the right-hand side of the house, L, from the bar, also by a door close to the stage, M; and to the stage entrance, by passing under the stage to the steps leading to the stage-door, but the way is too circuitous to be of much use, and is besides dark and very dangerous by reason of broken steps and flooring.

There is also another passage behind the bar, marked N, 2 ft. 10 in. wide, leading into the vestibule just outside the door J, immediately at the top of the outer steps in the principal entrance.

There is generally throughout the house an absence of proper fastenings to the doors, or, indeed, of any precautions for the public safety, and the whole building is full of pitfalls, differences of level, and unprotected steps. But it will be understood, from the foregoing description, that the main danger was at the bottom of the balcony stairs, where, in fact, the accident occurred; and although it was pointed out by the borough surveyor that the barrier was dangerous to the public (and the event proved him to be right), I found that it had been reinstated precisely as it was before the accident.

THE COLUMN OF FUENTENOVILLA.

In the province of Guadalajara and the judicial district of Pastrana, situate about two miles from the river Tajuña, and at the edge of a plateau, lies the old Spanish town of Fuentenovilla. It is recorded of it that it was partly burnt down in 1712 by the soldiers of the Archduke Charles of Austria, the conflagration consuming the archives, containing many valuable documents relating to the history and the ancient privileges of the town. Most of the old landmarks of the place were levelled on that occasion, but three still remain. They are the parish church, the public fountain, and a column in the market-place (the subject of our illustration), which has puzzled the brains of a good many antiquaries.

The column in question has an elevation of 34 ft., without reckoning the cross at its top, which measures 3 ft. The bottom step is 46 ft. in circumference by 1 ft. 6 in. high. The lower part of the column is much damaged, and has also suffered greatly from the tooth of time. Its shaft measures 21 ft., and is divided at one-third of its height into two parts by a small round moulding, a fascia with triglyphs, and a fillet from which springs an ogee moulding on which rests a kind of collar of leaves. The remaining portion of the shaft to the capital is fluted.

From the ogee moulding of the powerful capital, leaves sprout out, interrupted by four human-headed monsters, forming its angles, and which, representing the lower part of the human trunk, finally end in architectonic scrolls. Two of the figures have the breast covered with feathers, and are possessed of wings, in place of arms, which, with the arms of the other two figures, serve to support three straight fillets. The latter carry a balcony of small balusters, and short pedestals at the four corners, which are surmounted again by vases adorned with festoons, and carrying balls.

Upon the balcony rises a pyramid twice truncated by an ogee fluting and fasciæ, with the effect of presenting to the view three pyramids superposed upon each other. Crowning all, a slight cross of iron with a fane terminates this curious monument, of the origin and object of which no certain information exists.

From the position which the column occupies within the town, and from the fact that it does not present any indication of chains or rings of iron ever having been attached to it, it is believed that it was constructed to mark its jurisdiction; but there is a tradition preserved among the inhabitants that in olden times it was used as a gallows, and that it was usual to suspend condemned criminals from the heads of the human figures which form the principal ornament of the capital. On that account it was attempted, not so very long ago, by some rioters, to pull down the column.

THE NEW TOWN HALL FOR LIMEHOUSE.

The Limehouse Vestry have finally decided to erect a new town-hall upon a site within the parish which has been specially purchased for the purpose. The estimated cost of the building is between 8,000*l.* and 9,000*l.* The subject was discussed at a meeting of the Vestry held last week, when the comparative cost of similar buildings in the East End was referred to. It appears that the cost of the Poplar Board of Works Hall was 7,330*l.*; the Poplar Town-hall 7,500*l.*; and the Limehouse Board of Works Hall 5,172*l.* Mr. Potts, one of the members, said he was thoroughly in favour of building an adequate hall for parochial uses, because a revenue would accrue from it as a place of public assembly, and as the sum required could be borrowed and spread over a long period no intelligent ratepayer would object to the outlay. The Local Government Board having had the plans of the building submitted to them, have approved the same, and sanctioned the borrowing the money from the Metropolitan Board of Works for the erection of the building.

THE GRAND THEATRE AND OPERA HOUSE, LEEDS.

When the old Theatre Royal in Hunslet-lane, which had existed there for over 100 years, was destroyed by fire, Leeds, with its population of 300,000, was left with only one theatre.

Some doubt for a time was felt by playgoers whether the old Theatre Royal would be rebuilt; but when it was known that the site was sold for street improvements, all chance of a second theatre seemed to disappear. However, about February, 1876, a meeting of influential gentlemen, who had felt the want deeply, was held at the office of Messrs. Nelson & Barr, solicitors, when it was determined to form a company to build a really first-class theatre upon a central site. Previously to the scheme being brought before the public, a fire swept away the old Amphitheatre, and left Leeds for a time without a dramatic place of amusement.

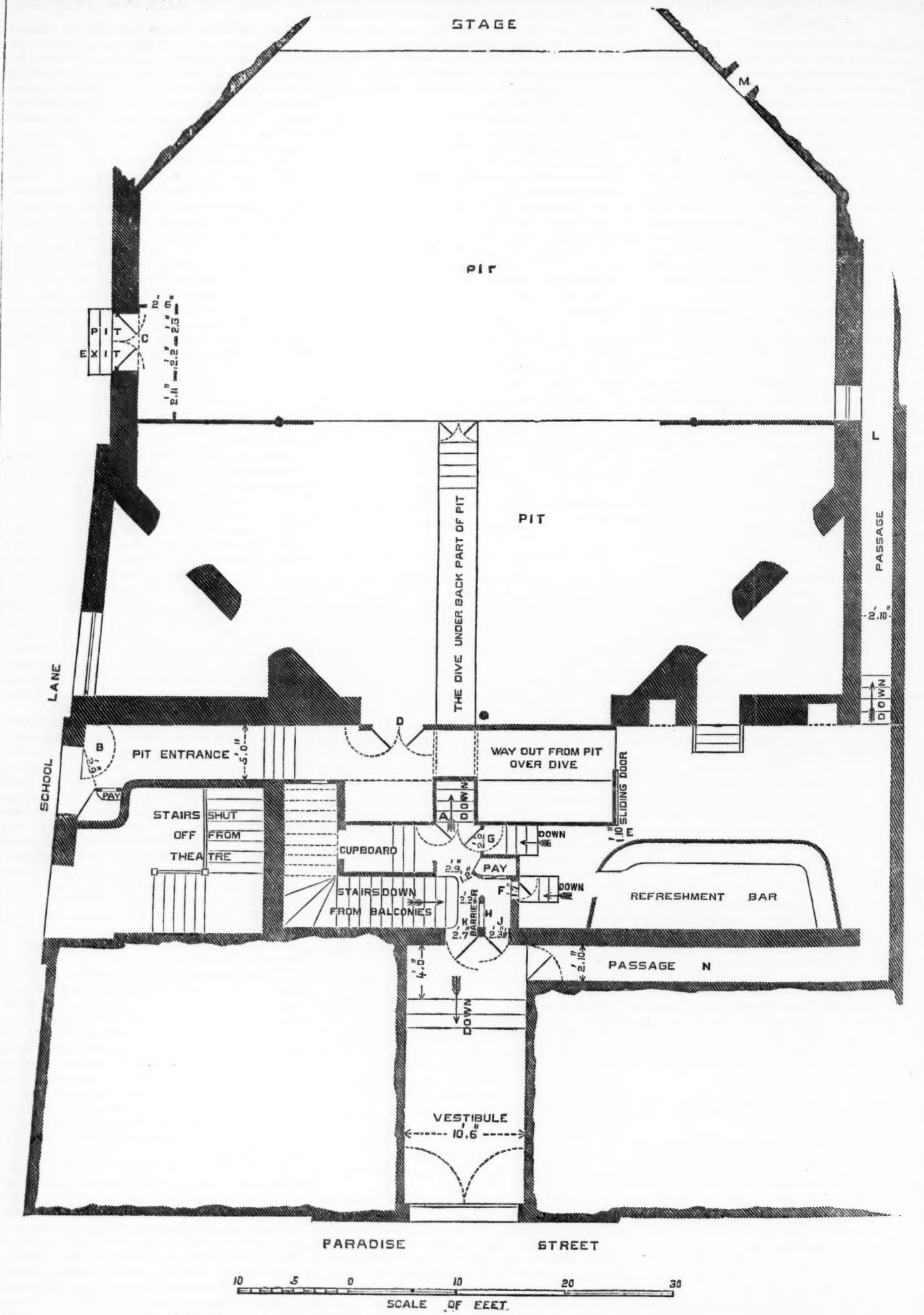
Considerable delay was experienced in obtaining possession of the site for the new theatre by reason of the non-expiration of the tenancies, and progress had also been made with the plans, in which were incorporated shops and other business premises; but a strong wish was expressed from many quarters that an assembly-room should also be incorporated with the scheme. This entailed an entirely fresh set of plans, and a further period of delay. The plans, however, in the autumn of last year, were approved of, and submitted for tenders, the excavations having, in the meanwhile, been completed. The works were commenced about the middle of October last year, and now, after the lapse of thirteen months, the theatre is ready for opening.

It was determined, in the construction of the building, the public should have every accommodation given to them in the shape of cloak-rooms, with lavatories and other conveniences attached. It was also determined that the scheme should be upon a sound financial basis. The site, which is in New Briggate, covers an area of nearly three-quarters of an acre, adjoins Harrison-street, and was purchased at an average price of 6*l.* 10*s.* per yard; and the tenders being sent in during a depression of trade, the directors obtained contracts at very reasonable rates.

In addition to the rental which will accrue from the theatre, there are six commodious shops, an assembly-room capable of accommodating 1,200 persons, with supper-room, retiring-rooms, cloak-rooms, and lavatories, with kitchen above; and underneath the entrances of the theatre are large fireproof cellars for wine-merchants or storage purposes, with separate access. This assembly-room is over the shops.

The accommodation of the theatre is divided into pit and pit-stalls, dress-circle, upper circle, amphitheatre circle, gallery, six stage-boxes, eight family boxes, eight upper private boxes, and six amphitheatre boxes; the whole giving seating accommodation for about 2,600 persons, in addition to which standing room is provided for 200 more.

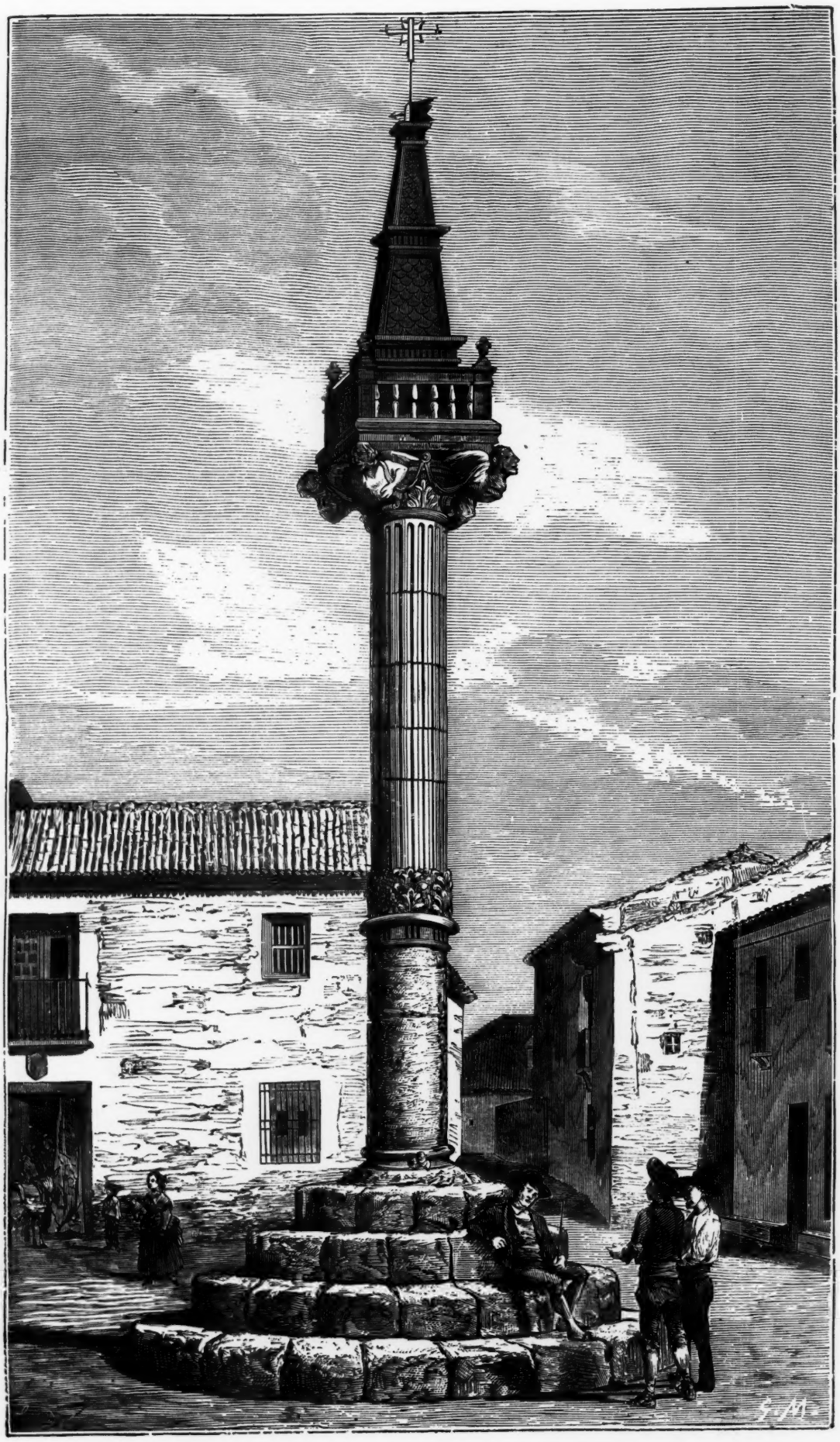
The height from the cellar to the level of the stage will be 30 ft., which would enable a good-sized castle or ship to be sent up from the regions below. From the stage-level to the gridiron, or floor over the stage, there is a height



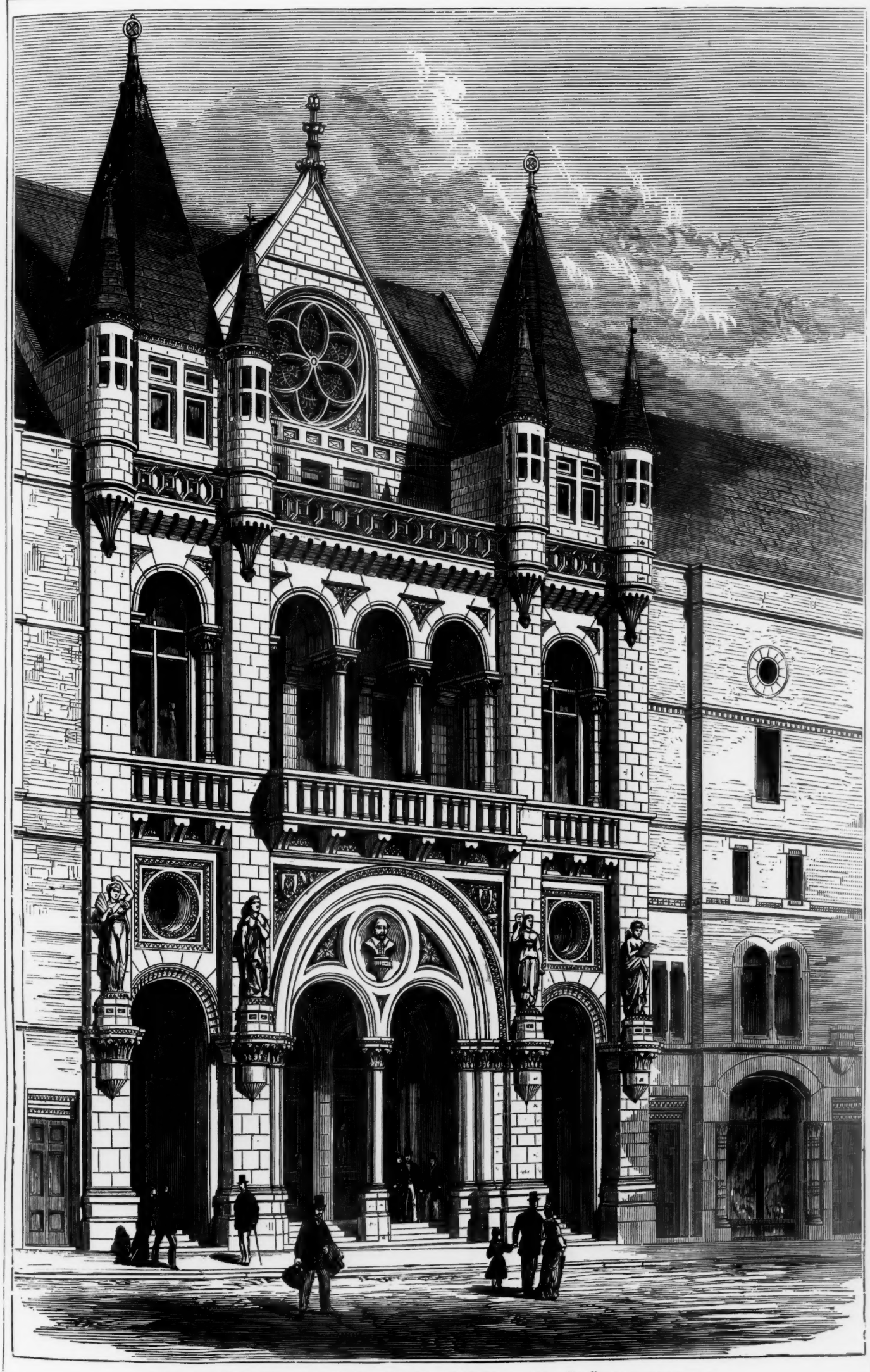
PLAN OF THE COLOSSEUM THEATRE, LIVERPOOL.—*The Scene of the Recent Disaster.*

of 70 ft.; and from the gridiron to the apex of the roof over, a further height of 18 ft.; the total height from the cellar-floor to the apex of the stage-roof being 118 ft. From the footlights to the back wall there is a distance of 75 ft.; and between the walls of the stage a width of 72 ft.; but, as the main walls of the stage are pierced with openings opposite the stage entrances, and as the stage itself is surrounded by a corridor 6 ft. 6 in. in width, the full 72 ft. of stage can be occupied with a set-scene, and the stage entrances and access be still preserved.

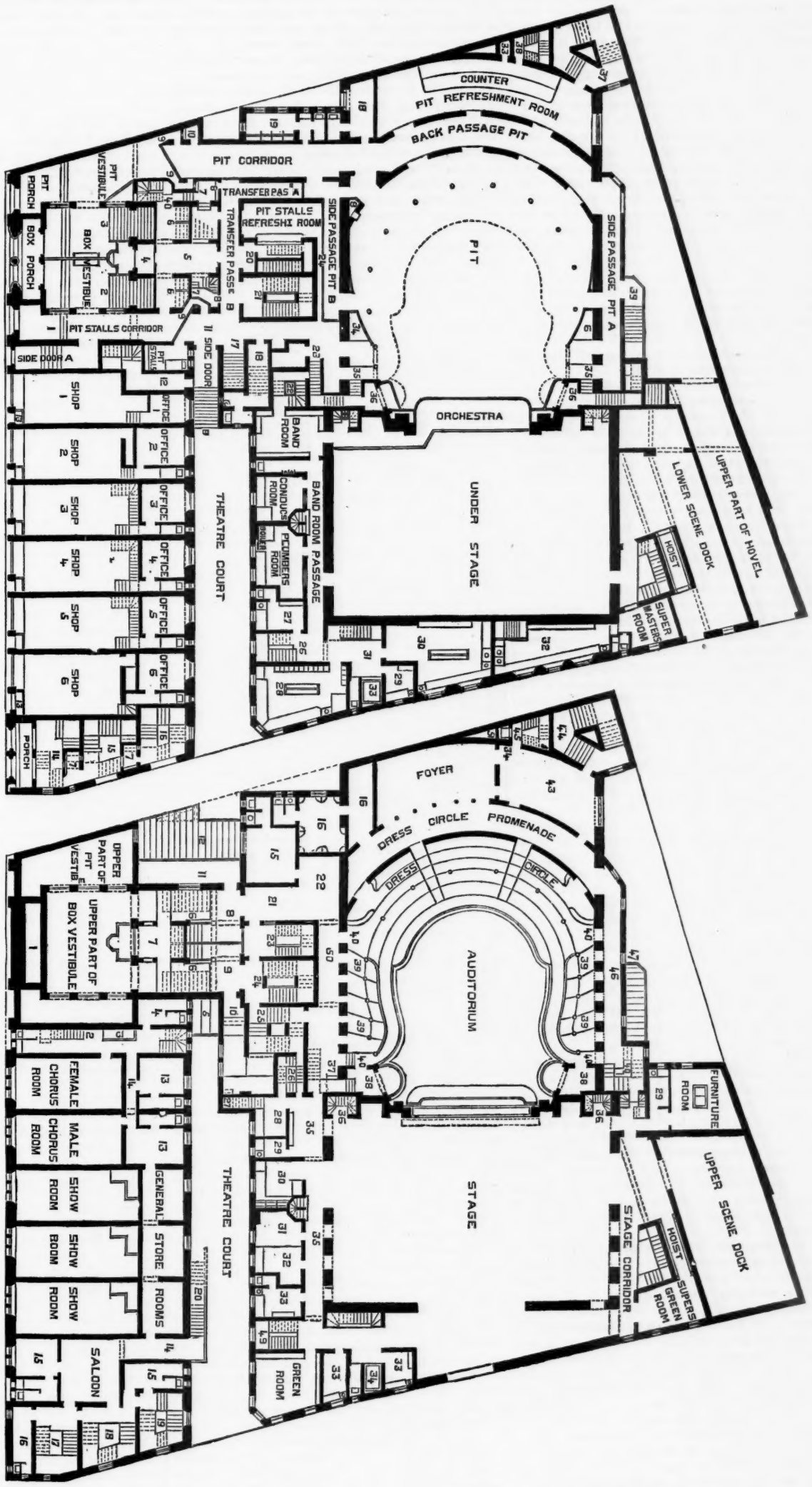
Surrounding the stage-corridors are rooms for the use of the stage and gas men, hand property room, stage-manager's office, furniture storage rooms; large scene-dock, two green-rooms, the principal one being at the corner of the stage block of buildings, and commanding a pleasant outlook upon Briggate. On the stage-level are five "star" dressing-rooms; and on the other



THE COLUMN OF FUENTENOVILLA, SPAIN.



THE LEEDS THEATRE AND OPERA HOUSE.—Mr. G. Corson, Architect.



THE LEEDS THEATRE AND OPERA HOUSE.—*Plans.*

floor levels, both below and above the stage, further dressing accommodation is provided for the actors and actresses, ballet, extras, chorus, boys, girls, and supers., every one of these rooms having direct daylight, and being supplied with hot and cold water. Owing to the fall of the ground, the stage-level is considerably above Harrison-street, and all the rooms are above the ground. Advantage has also been taken of the difference of the level, to obtain another scene-dock level with the street. In addition to the accommodation described, there are two bath-rooms,—one for ladies and another for gentlemen; property work-rooms, modelling-room, carpenters' shop, band-room, conductor's room, bill-inspector's office, plumbers' shop, smiths' shop, engine-room, armoury, wardrobe and sewing rooms, manager's private room and waiting-room, gasfitters' workshop, rehearsal and ballet-practice rooms, and large general storerooms. Under the court between the theatre and assembly-room buildings are fire-proof cellars, in which the gas-meters, lime-light apparatus, and other sources of danger are placed.

To guard against the spread of fire, the various departments are placed in blocks, a large portion of the site adjoining Briggate being occupied with the various entrances and staircases, cloak-rooms, lavatories, &c. The auditorium and stage have their axis lying parallel with Briggate. On the right hand, or prompt side of the stage, are the dressing-rooms, wardrobe, and manager's offices; and on the left side the scene-docks, rehearsal-rooms, store-rooms, and carpenters' shop. At the back of the stage, but on a level above, is the painting-room, fitted up with four painting-frames, two 48 ft. by 31 ft., and two 30 ft. by 18 ft. At the back of the auditorium are the refreshment and smoking rooms, drawing-room, and promenades; no workshops or storerooms of any description connected with the theatre being placed under or over the stage or auditorium. Thick solid walls separate all the blocks, while all the floors of the corridors, refreshment-rooms, and work-rooms, are composed of fireproof materials. The whole of the steps used in the building are formed of concrete made of Portland cement and slag from the Aire Side Works.

There are three tiers of working flies on each side, and in addition, under the first tier of flies, there are lime-light flies in which the gas arrangements are placed for the battens. The gridiron extends over the whole of the stage. In the cellar there are two mezzanine floors, and the cellar occupies the entire width of the stage.

In order to obtain a thoroughly strong and satisfactory stage, iron has been used for the under construction. There are twenty-three cuts in all, five of them being bridges, each of which is 37 ft. long and 3 ft. 6 in. wide; in front of each bridge there is a narrow gas cut by which the stage is strengthened laterally, so as to prevent its racking forward. The drawings for the stage were made by Mr. J. R. Watson, and the work was carried out by Messrs. Cooper & Dawson. Mr. Robert Wade has superintended the laying of the stage skin, and also the fitting of the scenery.

All the enrichments of the interior have been specially modelled from detail drawings. The proscenium, and work generally, by Mr. Good; the ceiling, by Mr. Appleyard; stage-boxes, by Mr. Paler; and caps, box-divisions, and fronts, by Mr. Hammond.

In the construction of the walls of the auditorium, corridors, and staircases glazed bricks and tiles are largely used, thus contributing greatly to the light and appearance of what are usually dismal appurtenances in theatres.

The works have been satisfactorily carried out by the following contractors:—bricklayer, mason, carpenter, and joiner's work, by Mr. J. Wood; slater's work, by Messrs. Watson & Wormald; plumbing, glazing, gasfitting, and sunlight work, by Mr. Joe Lindley; ventilating cones, by Messrs. Calvert & Briggs; plastering work, concrete steps, and carton pierre decorations, by Mr. John Franks; concrete floors, general wrought-iron work, and wrought-iron roofs, by Messrs. Cooper & Dawson; ironfounders' work, by Messrs. Grayson & Hardisty, Mr. Joseph Bedford, and Mr. Samuel Dawson; painting and decorating, by Messrs. J. T. Pollard and F. Jackson & Co.; stair railings, by Messrs. Exley & Son; and the furnishing and upholstery, by Messrs. Pearson Bros., all of Leeds. Locks and fittings, by Messrs. Smith & Son, of Birmingham; gas battens, by Mr. G. L. Smith, Birmingham; statuary and busts, by Messrs. D. Brucciani and L. Brucciolli, London; limelight apparatus, by Mr. D. Purves, London. Mr. Wm. Telbin has painted the act-drop, which is a view of Kirkstall Abbey, and the proscenium wings and border. The stock scenery has been painted by Mr. Charles Fox, of her Majesty's Theatre; Mr. John Galt, of St. James's and Vaudeville Theatres; Mr. Hall, of the Adelphi Theatre; and Mr. Lister Sutcliffe. Messrs. William Aivey and Mr. Robert Kirkby have acted as general foremen for the builder during the erection of the building.

The cost of the whole, including site, amounts to close upon 60,000*l.*

The architect of the building is Mr. G. Corson, of Leeds, ably seconded by Mr. J. R. Watson, whose knowledge of the working and detailed arrangements of theatres, both behind and before the scenes, has been of the greatest service in the preparation of the plans and in carrying out the works.

REFERENCE TO PLAN.

Ground Plan.

1. Pit stalls, amphitheatre.
2. Upper box stairs.
3. Box stairs.
4. Pay-places.
5. Treasury and office.
6. Store-place.
7. Pit-pay.
8. Transfer.
9. Queue.
10. Extra pay-place.
11. Side entrance B.
12. Professional entrance to music-room.
13. Porch.
14. Principal entrance to music-hall above.
15. Staircase, second seats.
16. Gallery stairs.
17. Stairs to amphitheatre.
18. Ladies' cloak room.
19. Gentlemen's lavatory, &c.
20. Transfer stairs.
21. Gallery inlet stairs.
22. Manager's stairs.
23. Stalls vestibule.
24. Pit-stalls refreshment passage.
25. Pantry A.
26. Gentlemen's stairs.
27. Star dressing-room.
28. Ballet dressing-room.
29. Ballet mistress.
30. Extra dressing-room.
31. Ladies' passage and stairs.
32. Super. dressing-room.
33. Hoist.
34. Store-place for chairs, &c.
35. Orchestra-stalls stairs.
36. Stage box.
37. Gallery exit stairs.
38. Refreshment-room stairs.
39. Back exit pit.
40. Acting manager's stairs.

Upper Plan.

1. Upper part of open porch.
2. Stairs up to music-hall.
3. Stairs from below.
4. Urinals.
5. Glass roof over side entrance.
6. Box stairs.
7. Carriage waiting-room.
8. Box landing.
9. Upper box landing.
10. Into library.
11. Acting-manager's office.
12. Glass roof over portion of pit corridor.
13. Principal's room.
14. Passage.
15. Ladies' cloak-room.
16. Gentlemen's cloak-room.
17. Front seat staircase.
18. Second seat staircase.
19. Gallery staircase.
20. Stairs up to front seats.
21. Ante-vestibule.
22. Usher's vestibule.
23. Transfer stairs.
24. Gallery inlet-stairs.
25. Amphitheatre staircase.
26. Manager's private stairs.
27. Up to library.
28. Stage Manager's office.
29. Stage dressing-room.
30. Hand property-room.
31. Carpenter's room.
32. Gas-man's room.
33. Star dressing-room.
34. Hoist.
35. Stage corridor, prompter's side.
36. Stage stairs.
37. Upper box stairs.
38. Stage box.
39. Family boxes.
40. Gangway.
41. Top over sunk orchestra.
42. Floats.
43. Box refreshment-room.
44. Gallery outlet-stairs.
45. Refreshment-room staircase.
46. Private box corridor, O. P. side.
47. Glass roof over back exit pit.
48. Upper box stairs.
49. Gentlemen's stairs.
50. Private box corridor, P. side.
51. Air-shaft.

A NEW PLANING TABLE.

Under the somewhat ambitious title of "Sanday's Patent Universal Planing Table," Messrs. Abbott & Co., of Newark-on-Trent, are introducing what will probably be found to be a very useful appliance where perfect accuracy of work is essential. By the kindness of Mr. W. Walker, the well-known cabinet manufacturer, of Bunhill-row, the table was shown at his works on the 4th inst., and it appeared to us to deserve all that is claimed for it, barring its title of "universal,"—if that adjective is to be taken to mean that it will do all kinds of planing,—for it will not plane wide surfaces. For the use of cabinet-makers, joiners, model-makers, plane and rule makers, and for parquetry work especially, it will, we should say, be found very serviceable, for there seems to be no reason why the most accurate work should not be turned out by its aid, even by unskilled workmen. It is, in fact, a purely mechanical aid to trueness of hand-planing, and insures perfectly straight lines. It is claimed for it that all the planes now in use, such as match-planes, rabbeting and moulding planes, hollows and rounds, &c., can be used upon the table, and fixed with the greatest rapidity. The table is, in all essential respects, merely an ordinary carpenter's bench, fitted on one side with an angle-iron of the required size planed perfectly true at its outer edge, against which the plane works. This angle iron can be raised or lowered at one end as required. In order to hold work to be wrought at any convenient part of the table, special lever clamps, of novel and convenient construction, are provided, and these can be fixed in any required position, nuts let into the table being furnished for the purpose. A jaw worked by a screw, in connexion with an ordinary bench stop, is provided for holding work end-ways, and there are holes in the table to enable the bench stop to be adjusted to any length of work. A similar jaw is provided with a movable cap made of wood for holding finished work. Parallel guides, set true with the edge of the angle iron, ensure perfect parallelism. A special contrivance is made to act as a stop against which the work is placed when angles are to be planed, and is fitted with two small thumb-screw clamps for holding delicate work. A further arrangement is supplied in connexion with this, for ensuring absolute exactness in the length of any number of pieces, as in parquetry work, &c. For bevel-planing, a specially constructed plane, adjustable to any angle by being made to pivot and work in quadrants, is provided. As an example of what can be done with the aid of the table, we were shown a piece of parquetry, 7½ in. square, containing 145 pieces, with a total of 496 sides.

TOWN DRAINAGE IN THE WEST RIDING.

On Wednesday, November 6th, the drainage committee of the Heckmondwike Local Board, in the West Riding of Yorkshire, visited the sewerage and sewage works at Ossett and Castleford, accompanied by the engineer, Mr. M. Paterson, of Dewsbury. The former have just been completed at a cost of 25,000*l.*, and nearly the whole of the sewage of a very extensive and straggling district is delivered at two outfalls, one at Ossett Spa and one at Healey. The sewage at each outfall is treated alike, flowing by gravitation over a small under-shot wheel, which by working an agitator mixes the lime effectually and discharges the mixture into the stream of sewage, precisely as it strikes the bucket of the wheel. The sewage then flows into and through three settling-tanks, and so on to areas repectively two acres and one acre and a half in extent, carefully prepared as natural filter-beds. The sewage to be treated is of the most difficult kind, being chiefly,—at present,—manufacturing refuse from woollen-mills, including dye wares of all colours, so that sometimes in the course of an hour the discharge will present three distinct hues. The total population contributing to the sewers, when all connexions are made, will be about 9,000, two-thirds of which are drained by the eastern and one-third by the southern or Healey outfall.

The works at Castleford are nearly completed, and consist of a complete system of sewers, and a partial system of top water drains laid about 5 ft. below the surface, the complement of this system being made up by the existing sewers; a storage-tank sewer containing 375,000 gallons, a pumping-station, and twelve acres and a half of land. Castleford lies at the confluence of the Aire and Calder rivers, the margin whereof is very flat and liable to floods. Hence, the main intercepting river is constructed below ordinary river level, and much difficulty has been met with from water. All the difficulties have, however, been successfully overcome, and the quantity of water making its way into the whole of the main sewers has been gauged to be not more than 15,000 gallons per twenty-four hours. The engines have 16-in. cylinders and 20-in. pumps delivering into a 16-in. rising main 1,200 yards long. The engines, pumps, and boilers are in duplicate, and interchangeable in working. The rising main was tested by hydraulic pressure after jointing and before covering. It delivers on the summit of the sewage land into a gauge basin, by means of which the working of the pumps may be checked at any moment. The land is a piece of rising ground with a subsoil of fine rich loam 3 ft. to 6 ft. thick, with a substratum of clay, and is well adapted for sewage treatment. The sewage will pass on to this area without settlement in tanks, and will be caught by subsoil drainage and conducted into a shallow settling-pond constructed on a corner of the land liable to flooding, about half an acre in extent, over the sill of which it will discharge through an outlet gauge basin and 2-ft. fireclay conduit into an adjacent watercourse. All these works are now carried out, and the Local Board are pushing forward with the connexions and

private street drainage, which also has been designed by Mr. Paterson. The cost of the whole of the above works, including a cottage for the engineman, and land, &c., has been about 25,000*l.*, and the private drainage will entail a further outlay of 9,000*l.*

ST. ALBAN'S ABBEY.

THE NEW ROOF TO THE NAVE.

SIR,—I am anxious not to let the opportunity pass of making a remark on this subject, following up the letter of "S. F. C.," on p. 1154 of the *Builder*. The suggestion there made (to put a high-pitched roof only to some portion of the nave) has the merit of novelty, and other merits as well; and might deserve serious consideration if we had only to decide how little injury should be done to the building. But I must confess myself unwilling to discuss the question of limiting the damage while there is a chance of preventing it altogether. If I rightly understand, there is still a chance of the question of the roof being re-opened. The Society of Antiquaries and the other societies will now be in session, and so considerable a matter must form part of their work at the very earliest moment. Circumstances have made me acquainted with a very large number of people who look upon everything belonging to St. Alban's with especial interest. It would be possible for me to tell you the very small proportion of the whole number who look with satisfaction on what the building committee now proposes. It would also be possible to describe the indignation and regret felt by very many. It is felt that the decision was come to in the dark, under circumstances of excitement, and under something approaching to strong personal dictation. I do not know how true this may be, but subscribers to the works have put it to me forcibly in that way. The *Builder* has led the way,—as it was well entitled to do,—in strong protest against the high-pitched roof; and other journals, the *Times*, for instance, have lent less well-informed, but still powerful support. I hope, as the case is in many ways a test-case, that some permanent record of the advice and protest of the great bodies of architects and antiquaries, and lovers of our great national buildings, may yet be made.

You are aware that I did not despair of the old roof, and that I still think it might have been retained after reparation. I am quite willing not to re-open that part of the question, so long as it is not allowed to prejudice the decision on the more important one. The importance is really very great, to all who have or hope to have the care of old buildings. It is probably the first important case in which the anti-restorationists have made a strong impression, and have driven home to the minds of many people the conviction that letting things alone ought to be more largely practised, I mean in the sense of not improving old buildings according to our notions, but only helping them to endure a long time as they came down to us,—unaltered in feature. I do not call the long nave of St. Alban's as it stands perfect work, but I regard every part of it with affectionate interest, and cannot contemplate calmly as yet the radical change in its expression which is, so mistakenly as I feel, likely to be made,—in the vain endeavour to improve it.

Absence from London hinders me from referring to memoranda by which I should have liked to support the opinion of "S. F. C." as to the antiquity of the low roof over the "Decorated Bays." I am as convinced as he is that there is absolutely no evidence that a high-pitched roof ever existed over that portion of the building. I will, with your permission, take a future opportunity of dealing with this, which is worth consideration on its own account, and with comparisons drawn from other buildings, to elucidate the practice of the latter half of the fourteenth century in respect of the pitch of roofs. It will be considered by me still more deserving of some careful labour if it should prove the means of reaching many for whom the old meaning of "restoration" has still a charm; those who would never knowingly countenance interference with the original design of an ancient building. JAMES NEALE, F.S.A.

Loughborough.—Messrs. Hodson, Price, & Hodson, of Loughborough, have been appointed architects for the erection of new schools for the School Boaod of Loughborough.

ROADS.

AT the last meeting of the Liverpool Engineering Society, Mr. Robinson Souttar in the chair, Mr. George Biddle read a paper on "The Materials, Cost, and Construction of Roads." The author, while dealing with various forms of street pavement, directed the attention of the members chiefly to the consideration of macadamised and sett-paved roads. In deciding as to the material and form of construction to be adopted many things had to be taken into consideration, not only the first cost of the material and labour in laying the road, but also the subsequent cost of maintenance and scavenging. The latter of these items formed a very important element in the cost of a street. Impervious pavements were being much used in many large towns at present, and were giving most satisfactory results, though the theory that they were best was open to question. It was found that granite pavement lasted the longest of any, twenty years being the life of a first-class impervious sett-pavement. As regards the comparative safety of granite and wood, it has been found from actual observation that a horse can travel without falling three times as far on the latter as on the former. An interesting and animated discussion followed the reading of the paper, and the meeting concluded with a cordial vote of thanks to the author.

BUILDERS' BENEVOLENT INSTITUTION.

ANNIVERSARY DINNER.

THE thirty-first anniversary festival in aid of the funds of the Builders' Benevolent Institution was held on Thursday evening, the 7th inst., at the Freemasons' Tavern, Mr. Edward Conder, president, in the chair, supported by about 220 of the friends and subscribers to the charity.

The usual loyal and patriotic toasts were duly honoured, the chairman, in proposing "The Prince and Princess of Wales," referring in eulogistic terms to the services rendered by his Royal Highness in connexion with the Paris Exhibition,—services which could not but result in cementing the English and French nations still closer together in the bonds of unity and peace. Major Brutton responded for "The Army and Navy," and Captain Bird, of the First Surrey Rifles, for "The Reserve Forces."

The Chairman, in proposing the toast of the evening, "Prosperity to the Builders' Benevolent Institution," said:—Thirty-one years ago this Institution was founded by the late Mr. Cozens, and from that time to the present it has done an immense amount of good in alleviating distress, and in helping many a poor person who has seen better days. Some of those who have been our pensioners were once in affluent circumstances. I find that there are on the list of pensioners at the present time twenty-four men receiving 30*l.* a year, and twenty-three women receiving 24*l.* a year, and in a few days an election will take place for two more men and two more women. Thirty pounds a year is really but a very small sum for a person who has seen better days to live upon, and I would that it could be increased, but there are so many applicants for the benefits of this Institution that we really cannot increase it. It has, indeed, only lately been increased from 24*l.* to 30*l.* There is no doubt that the trade of the builder has more vicissitudes than almost any other trade in the metropolis. It is liable to losses from various causes, sometimes through no fault of the builder. As a case in point, I recollect that some years ago the fact of a brick falling down from one of my scaffolds cost me 800*l.* In its descent it struck against something and rebounded, and in falling it seriously hurt some one. An action was entered against me for 1,500*l.*, and I was very glad to settle the matter for 800*l.* Now such a calamity as that would cripple many men, particularly if they were only just commencing business. Those who are able to escape such calamities should be thankful that they are able to help those who are in misfortune. Again, many master builders, through being overtaken by ill-health, are not able to look after their work as they ought to do, and we all know that unless we look sharply after our work it is impossible to make it pay. Others, again, are unfortunate in their contracts, either through strikes, or from some combination of unfavourable circumstances. Some, again, seem never to do well, and almost seem destined to be unfortunate. However, for all, we do the best we can in this Institution. I must say I am very sorry to observe that the increase in the funds of this society has not been commensurate with the increase of the population of London, and with the increase of the London building trade. I find, on turning to the "Directory" for 1852 that there were then 746 builders in London, and I also find that the subscriptions and donations to this Institution for that year amounted to 1,223*l.* [On turning to the "Directory" for 1878, I find the names of 1,355 builders in London, nearly double the number of those in 1852, but I am sorry to say that the subscriptions and donations for last year only amounted to 1,440*l.*, only about 200*l.* more than they were in 1852. Now this is a state of things not creditable to a great trade like ours, for undoubtedly we are the largest trade in London, and I do urge upon you and upon every member of this association to endeavour, before our next annual meeting, to obtain new subscribers to the Institution. I am quite aware that many of the larger builders, and of those connected with the building trade as merchants and manufacturers, have given liberally, and we have to thank them very much for their liberality in past times, as, I have no doubt, we shall have to thank them in the future. But when I look at the "Directory," and find that out of the 1,355 builders there specified, only about one-third of their names appear in our subscription-list, I say that there is an ample field for all zealous friends of the Institution to endeavour to obtain new subscribers to its funds. It is not always, perhaps, a very pleasant thing to be begging for subscriptions; but when we are trying to do good to our poorer brethren, it is our duty to put our personal feelings aside. Many a non-subscriber might, by a little well-directed persuasion, be induced to give a guinea to the funds of the Institution, and he will never miss it in the year's income. I am sure that if all the builders of London could see, as I have seen since I became its president, the working of this society, we should have a much larger subscription list. The committee and our very good treasurer, Mr. Plucknett, work hard in looking after the interests of the charity, and in seeing that the persons who apply to become pensioners are the right sort of people,—that they really have been builders. I can, therefore, with confidence ask you to do your utmost to aid the Institution. As builders it is our bounden duty to assist those of our trade who are in distress, and who have lost their all by misfortune and from causes beyond their control. If additional help be accorded to the Institution, the committee will be only too glad to extend the area of its operations. I, therefore, ask you to drink "Prosperity to the Builders' Benevolent Institution."

The toast was enthusiastically received.

Mr. Thomas Robinson, in felicitous terms, proposed the health of the chairman, who briefly responded.

The Chairman next proposed "The Vice-President and Trustees," a body of gentlemen, he observed, who had done good suit and service for the Institution. They had given largely to its funds, and had all of them been members of the Institution for some years, or they would not be vice-presidents and trustees. With the toast was coupled the name of Mr. Freeman, who appropriately responded.

Mr. W. Higgs said it was his great pleasure and privilege to propose the health of the worthy treasurer of the Institution, Mr. George Plucknett, whose many acts of kindness and good works were known to them all. In looking after the affairs of the Institution he devoted a great deal of time and trouble, and they all wished him long life, health, and happiness.

Mr. Plucknett, who was warmly received, said the chairman, in his able and heartfelt appeal for aid in carrying on the work of the Institution, had not mentioned that the society had a capital, if he might so call it, which rendered it one of the great charitable institutions of the metropolis. It had an accumulated capital of upwards of 20,000*l.* The Institution was a perpetual charity. Its managers had entered into certain engagements which they were bound to fulfil. He cordially seconded the chairman's appeal to the members to obtain new subscribers, and he felt sure that all who felt a lively interest in the prosperity of the Institution would respond most heartily to that appeal.

The Secretary, Major Brutton, then announced

a list of subscriptions and donations, amounting in the aggregate to nearly 600*l.*, including donations of 52*l.* 10*s.* by the chairman, and 50*l.* by the Builders' Society.

Mr. Thomas Rider, in appropriate terms, proposed "The Architects and Surveyors," coupled with the names of Messrs. New and Franklin.

Mr. New, in responding on behalf of "The Architects," spoke of the desirability of the maintenance of harmonious relations between architects and builders, and said he should very much like to see greater interest manifested by the architectural profession in the welfare of the Builders' Benevolent Institution.

Mr. Franklin, replying for "The Surveyors," said it was not only desirable that harmony should subsist between architects and builders, but between architects, builders, and surveyors also.

The remaining toasts were "The Committee and Stewards," coupled with the name of Mr. Simpson, and "The Ladies," on whose behalf Major Brutton returned thanks in a humorous speech, and the proceedings were brought to a close at an unusually and commendably early hour,—ten o'clock.

PUBLIC OFFICES, ISLINGTON.

Additions being needed to the hall built for the Vestry in Upper-street by the late Thomas Allom over twenty years ago, it was finally decided to write to Mr. Arthur Allom, architect, to report to the committee upon the whole scheme; whose report and plans were finally adopted by the Vestry. The result is seen in a building recently erected, consisting of a large and well-proportioned public office on the ground floor, with a pay-office for roadmen; muniment-rooms, strong room, and stores beneath. The site—which is irregular in form—is about 60 ft. long by about 40 ft. in the widest part. There are no intermediate columns or supports to interfere with the view or the convenience of the public. There are lantern lights; and artificial light is obtained by two sun-burners by Strode & Co. The warming arrangements consist of four hot-water coils, combined with three open fireplaces fitted on the slow-combustion principle, much adopted in Worcestershire.

The contractors, Messrs. John Dears & Co., have just completed, under the architect's directions, the division of the offices into the various departments by means of framed partitions of pitch-pine and mahogany, 6 ft. 6 in. high, the upper panels being fitted with plate-glass, so that perfect supervision is obtained throughout.

NEW BUILDING REGULATIONS FOR GLASGOW.

The proposed new building regulations for Glasgow formed the subject of a public inquiry ordered by Mr. Cross, the Home Secretary, before Mr. Clarke, the Sheriff Principal of Lanarkshire, in the County Buildings, Glasgow, on the 31st ult.

The parties interested were represented as follows:—Mr. J. Lang, Clerk to the Police Commissioners, for that body; Mr. D. Watt, writer, for the faculty of Procurators; Mr. W. Borland, writer, for the Landlords' Association; and Mr. G. Smith, for the Factors' Association.

Mr. Lang, in opening the inquiry, explained that the regulations were intended to control the erection and alteration of buildings in the city, by providing sufficient air and light spaces and the like. The local authorities, he continued, having failed in their attempt to procure an imperial measure on the subject, had been obliged to have recourse to this form of legislation, by which the new regulations were embodied in the Provisional Order. He said that since 1844 the sanitary condition of the city, especially in relation to the dwellings of the working classes, had engaged the attention of the authorities. Prior to 1862 the statutory powers for regulating such matters were of a very limited description; indeed, they were merely those vested in the Dean of Guild Court at common law. The enactment passed in that year led to a great improvement in the construction of houses, but as the terms of the measure had been to some extent misconstrued, additional powers were still wanted, and these had been expressed in the new regulations. In conclusion, he argued that the necessity for these was evidenced by the fact that overbuilding was everywhere attended by a proportionately high death-rate.

Mr. Watt stated that while in favour of a general Act, he must condemn the regulations as containing powers which were of too sweeping a character to be entrusted to the Dean of Guild Court, and he urged that even if they were passed they should apply only to buildings to be erected, while he argued that compensation should be given for any existing edifices which they might affect.

Mr. Borland contended that if the desired improvements were essential they should be dealt with by a general Act, which would certainly award compensation to those whose vested interests might be impaired, and if they were merely expedient, the burden of carrying them into effect should not be placed on those whose property was affected, but on the community at large. It was a mistake to attribute the high death-rate in certain districts to over-building, especially when they were aware of the fact that the excess was due to infant mortality, which seemed to point to want of proper care of the young as the cause. The suburbs should in justice have been been brought under the regulations.

Mr. Smith concurred in the whole of the objections stated by his learned friends.

The Sheriff Principal, thinking it best that these statements should be submitted to him in writing, adjourned the inquiry for a fortnight for that purpose.

MINIATURE MUSEUMS.

Mr. Tito Pagliardini read a paper at the Cheltenham Congress, on "The Desirableness and Possibility of Attaching a Rural Scholastic Museum to every Board School." He contended that now Great Britain had decreed "quantity" in education, it became necessary to look to the "quality"; that reading, writing, and arithmetic were only the keys to knowledge, not the treasure itself. Education must fit all classes for the world they live in, but mere book-teaching cannot attain this end. That the teaching of "things" should precede the teaching of "words"; the concrete prepare the way for the instructive. Mr. Pagliardini, therefore, proposes to attach to every village Board school a miniature local museum containing classified specimens of all the products, natural and industrial, of the neighbourhood,—the only expense this would entail on the ratepayers would be the addition of a wing to the school-buildings. For the furnishing the museum with specimens illustrative of the geology, flora, and fauna of the locality he trusts to the numerous amateur collectors, ladies and gentlemen, to be found in good families among the country nobility and gentry. Then the teachers will find means of giving instructive practical lessons on agriculture, gardening, industry, domestic economy, &c., as will even enrol children as contributors to "their own museum," with a museum under municipal responsibility. Mr. Pagliardini trusts confidently that the gentry of the neighbourhood will occasionally lend some of the *chefs-d'œuvre* of art with which their country seats abound, and thus bring the refining influences of art to bear upon the juvenile minds, and perhaps call forth the latent spark of some unknown Giotto, or at least to improve the children's taste through the medium of the eye, that they shall later become competent and tasteful workmen and workwomen.

PORTLAND CEMENT: THE WEIGHTS AND MEASURES ACT, 1878.

Sir,—Will you allow us, through the medium of your paper, to call the attention of cement manufacturers and merchants to the above-named Act, and to suggest that now is the proper time for a uniform standard to be adopted throughout the trade with regard to Portland cement. Hitherto, this cement has been sold to the consumer at a price per bushel, or rather a supposed bushel, it having been the custom to call 100 lb. weight a bushel, whereas the actual weight per imperial bushel should be not less than 112 lb., and in many cases when the cement is heavily burnt it weighs from 120 lb. to 130 lb. per bushel. We would, therefore, suggest that all cement should in future be sold by actual weight, and the word bushel discarded, consumers would then know exactly the value they were getting for their money, and all manufacturers and merchants would then be on the same footing, and unfair competition avoided.

John C. Gostling & Co.

HARBOUR BARS.

At a meeting of the Society of Engineers held on Monday the 4th inst., Mr. R. P. Spice, president, in the chair, a paper on "Harbour Bars, their Formation and Removal," by Mr. Henry F. Knapp, of New York, was read. After some observations upon the importance of every port having an adequate outlet for its commerce, the author proceeded to observe that bars had been divided into three classes chiefly, viz., delta, drift, and wave. He maintained that all bars and shoals in broken or rough water should be treated in reference to wave action, as that was the sole cause of their formation. Engineers had lately accepted the theory of narrowing the channel of a delta-forming river by jetties, as the great cure of bar formation in its entrance. That theory, to the author's mind, had no feasibility to recommend it. He observed that the amount of wave action of water depended on two causes, viz., wind and depth of water, both of which modified it from the extreme of smooth water to that of mountainous billows; and as engineers could not control the winds from causing wave action, they must modify wave action itself, so as to deepen bars and prevent bar formation. To carry this theory into practice for the prevention of the formation of harbour bars, as well as to remove those already formed, which the author does on the theory of interference to wave action, he proposes to construct a barrier directly across the mouth of a river or harbour on the outside of its bar, in a depth of 50 ft. or 60 ft. of water, and having a height of from 20 ft. to 30 ft. above the bed. As the height of this barrier is the only quality necessary to produce the required interference to wave action, the thickness need only be measured by the solidity necessary to withstand the force that it is intended to detract from the waves. This barrier, according to the author, will not offer any impediment to the free discharge of the waters of the river, but on the contrary will protect and facilitate that discharge. Neither would it offer any impediment to vessels passing in and out at all times, as its top would be lower than that of the bar. Its sole use would be to destroy the building-up power of the waves, leaving unimpaired the full force of the river to cut out the bar.

COVERHAM CHURCH, YORKSHIRE.

This church has been restored and in a great measure rebuilt, from the designs and under the superintendence of Mr. C. G. Wray, architect, of London, at considerable cost. The tower, nave arcade, north side of chancel, north aisle and porch, which are all ancient, and possess much interest, have been preserved and restored according to their original character. The entrance-door from the porch is Norman, and the north side of the chancel possesses two Early English windows, the best being all early Perpendicular; several of these windows are filled in with stained glass.

The nave arcade has double splayed arches springing from octagon shafts without intervening capitals. A curious Jacobean three-light window has been removed from the east end of the chancel (which has had to be pulled down) to the west end of the north aisle, and an ancient cross, probably from Coverham Abbey adjoining, which was placed on the gable, has now been fixed over the porch. The north side of the church, which had been destroyed and rebuilt in very bad taste, apparently about a hundred years ago, lessening the width of the nave considerably, has been pulled down, and a new north side, a new east end, and a new richly-moulded chancel arch and piers, as also a new vestry and organ-chamber, have been erected in West Whitton stone.

The buttresses of the nave have been designed in conformity with an original one, which happily had been preserved adjoining the tower at the destruction of the north side.

The new windows are flowing Decorated in character, and of original and elaborate design. The chancel buttresses and the gable crosses are also of ornate description.

The church has been entirely reroofed in pitch pine, open-timbered, and covered with Westmoreland slates. It has been reseated throughout with open benches, and moulded and cut bench ends, all in pitch pine, and the seats are fitted with a novel contrivance for holding hats.

The pulpit, prayer-desk, chancel stalls, com-

munion-rails, and table are also new, and of handsome and original design. A new font, of Caen stone, designed by the architect, is the gift of the contractors.

The nave and aisle are paved with patent polished concrete, margined with glazed encaustic tiles. The chancel is paved with encaustic tiles, presented by the patron of the church, Mr. Thomas Topham, who has also given a new stained-glass window (by Messrs. Wailes, of Newcastle) for the east end of the aisle, and (with his family) one by Messrs. Hardman & Co., of Birmingham, for the east window of the chancel, as also reredos of majolica tiles (executed by Messrs. Maw & Co., of Broseley) for the east end of the north aisle.

Another tile reredos (supplied by Messrs. Minton & Co.) has been erected at the east end of the chancel, at the cost of Mr. Christopher Other, of Coverham Abbey.

The heating of the church is effected by hot-water pipes, the boiler being in an apparatus-room under the vestry, and has been executed by Messrs. Jones & Son, of Bankside, London.

The whole of the building works, including the seats and fittings, have been executed by Messrs. Jones & Sons, of Leyburn, Yorkshire. Mr. McWillie, of Leyburn, has been the clerk of the works.

The church was to be opened by the Bishop of Ripon on the 14th inst.

DRAINAGE ITEMS.

Maidstone.—Mr. J. T. Harrison, C.E., has held an inquiry at Maidstone relative to an application by the Town Council for permission to borrow 20,000*l.* for works of sewerage to be carried out under the direction of Mr. Lewis Angell, C.E. Mr. Angell said his original estimate for the work was 25,704*l.*, or with 651*l.* for Fant sewerage, the sum was 26,335*l.* Including engineers' costs, clerk of the work's salary, &c., the estimate was given at about 30,000*l.* The work was divided into three contracts. No. 1 contract comprised the main outfall sewer, and the amount was 12,363*l.* 9*s.* The work of this contract was practically finished. The contractors had made an extra claim of 3,206*l.*, on the ground that the foundations were bad, and that, instead of the ordinary sized sewers, they were obliged to make them larger and use much more cement in going through the old river bed. The second contract, which was for the tanks, amounted to 4,119*l.* A great deal of cement had had to be put in to strengthen the tanks. There was an estimated extra cost of 500*l.* for iron girders, &c., to further strengthen the tanks, but it had not yet been found necessary to use them. This would make the total cost of the tanks to be 4,619*l.*, or 1,619*l.* in excess of the original estimate, which was 3,000*l.* The third contract, which was for the drainage of the town, was let for 21,450*l.*, or some 9,000*l.* more than the estimate. The extra cost was accounted for by the increase in the contractors' prices, caused by the difficult character of the ground. A great deal of rock was found in the ground, and this, of course, increased the difficulty of the work. A sewer 7,630 ft. in length had been made to the Barming Heath Lunatic Asylum, which was not at first contemplated. The estimated cost of the Tovil sewerage was 2,000*l.*, and this had been contracted for. It had, however, since been proposed to carry out a different scheme. Lord Romney's agents, who were laying out land for building purposes, wanted the sewer to be laid up a new road which was to be constructed; and if this were done the cost would be 3,000*l.* If the original plan were carried out the total cost would be about 2,500*l.*, as 500*l.* would have to be paid as compensation. Lord Romney's agents had, however, now suggested another plan by which the cost would be made about the same, but the matter was still in abeyance. The cost, no doubt, would be about 2,500*l.* A sum of about 1,500*l.* was required for the piling of the sewage-tanks for a distance of 300 ft.; certain machinery necessary for the mixing of lime with the sewage would cost 500*l.*; a cottage at the tanks would cost 300*l.*; and 500*l.* would be the expense of inserting ventilating shafts in the old sewers. Including these items with the amount of the three contracts (37,932*l.*) and the sum required for extra works (5,500*l.*) this would make a total of 48,732*l.* for the work of drainage. Mr. Hoar, clerk to the Maidstone Local Board, said the remaining expenses were:—Engineering expenses (5 per cent. on the outlay), about 2,400*l.*; clerk of the works (two years), 200*l.*; additional inspector for six months, 75*l.*; six acres of land, 1,000*l.*; cost of purchase, 250*l.*; compensation, 2,000*l.*; his (Mr. Hoar's) law expenses, 1,000*l.*; advertising and printing, 60*l.*; and arbitrators, 50*l.* The inspector said this would make a grand total of 56,454*l.* for the works. The Town Council had already borrowed 30,000*l.* He asked the Town Council to reconsider the amount for which they had applied for drainage purposes, as it was evidently insufficient.

Acomb.—The Great Ouseburn Local Board propose to expend 1,000*l.* for works of sewerage and sewage disposal for the township of Acomb, where there are about 300 houses, the flow of sewage being 10,000 gallons per day. The works are to be carried out under the direction of Mr. Hornsey, the surveyor to the Board, and application has been made to the Local Government Board for permission to borrow the money required.

UTILISATION OF SEWAGE.

Dantzic.—Mr. Alexander Aird, who has successfully utilised the sewage of Dantzic for seven years, sends us a glowing account of the crops grown on what was once a barren sand. He has has also just contracted with the Municipality of Breslau (260,000 inhabitants) to utilise for twelve years, on 3,000 acres, the whole of the sewage of that city. He says that in Berlin the sewage irrigation system has already proved a great success, and that all the larger towns in Germany are preparing to carry out the same system. The Dantzic sewaged lands have this year produced crops of all kinds, exceeding those on the good lands—potatoes, 16½ tons per acre; white carrots, 14½ tons per acre. We shall give some particulars before long.

Kidderminster.—The new engines for pumping the sewage of Kidderminster were formally "inaugurated" on the 30th ult. Hitherto, the sewage has been received in tanks, and pumped thence about three miles to the sewage-farm of the Corporation near Stourport. By the use of the new pumping machinery the sewage will be pumped direct to the sewage-farm. The new system also makes special provision for dealing with the storm water. The outlay upon the work is 4,000*l.* The works have been carried out under the direction of the borough engineer, Mr. Comber.

COTTAGE HOSPITALS.

Mold.—A new cottage hospital has been erected at Mold, just beyond the Bailey-hill, on a very suitable site, at a cost of about 1,200*l.* Furnishing will cost about 600*l.* The hospital contains accommodation for eight patients, and has been erected from the designs of Mr. J. Douglas, architect, Chester.

Walsall.—The new cottage hospital at Walsall was opened on the 4th inst. It consists of three main buildings, with out-patients' department and other appurtenances, the wards being capable of complete isolation. The three chief buildings front the Wednesbury-road, and have an out-patient room on the Vicarage-place, and mortuary, *post-mortem* room, and other out-buildings in the rear. In the centre is the entrance-hall leading to the main corridor. Right and left of the entrance-hall are rooms for the sister-in-charge, the surgeon, board-room, &c. The left wing contains the female wards,—one called the Sister Dora Ward and the other the Forster Ward. The former is for eight beds, and is 33 ft. long by 25 ft. wide, with nurses' room and a day-room for patients attached. The Forster Ward is for four beds, and is 15 ft. by 26 ft. In this wing also is situated the operating-room, with its necessary adjuncts. The right wing is considerably larger than that on the left. It contains five wards, named the Bradford, the Hatherton, the Lyon, the Barnett, and the Foresters'. The Barnett and Lyon wards are for eight beds each, their dimensions being 33 ft. by 23 ft. The Bradford and Hatherton wards are each 15 ft. by 13 ft., and are to accommodate two beds each. The Foresters' ward is 26 ft. by 15 ft., and is for four beds. To each ward is attached nurses' room, bath-room, closets, day-rooms, and every convenience. The whole are connected by glazed corridors heated with hot water. Beneath the Sister Dora Ward a large room has been made for the accommodation of the Coroner and his jury at inquests, or for meetings of the subscribers, &c. The wards are heated with coal fires, with Shillito & Shorland's Manchester grates. The total number of beds is thirty-six, and each patient has a space of 36 ft. superficial area, with 1,000 cubic feet of air. The buildings have been erected by Mr. D. Moore, of Walsall.

DARLINGTON.

Mechanics' Hall.—The Darlington Mechanics' Hall has been re-opened, after decoration from designs by Mr. Pritchett, architect. Four of Watson's "double-current ventilating turrets" have been erected. The joiner work has been carried out by Mr. J. C. Martin; the brick work and plasterers' work by Mr. Robinson; heating apparatus by Messrs. Richardson & Co.; smiths' work, Mr. Ridley; gasfitters' and glaziers' work by Mr. Johnson. The painting and decorative work has been done by Messrs. Mossom & Son.

Closing of Ironworks.—The *Darlington and Stockton Times* announces that the Whessoe Ironworks will shortly be closed. They were commenced about eleven years ago as a co-operative concern under the name of the Drinkfield Works. As a co-operative concern they were unsuccessful, and after changes and attempts at reconstruction they passed into the hands of Messrs. Vaughan & Co., but after a very short period of work they stopped, and have lain idle for five or six years. The trustees of the late owners have now resolved to dismantle the works, and to sell the whole of the fixed plant, boilers, and furnaces, by auction. The works include forty puddling-furnaces and one rolling-mill, and the value might have once been set down at from 30,000*l.* to 40,000*l.*——The Darlington Iron Company's works, which for a long time have only been employing a small number of men, have already been closed, and the remaining workmen paid off. During the prosperous period of the iron trade which prevailed some years ago, the company at their two works employed 2,000 men, but for a considerable period only about 100 men had been at work there.

NEW PARKS.

Longton.—The Duke of Sutherland has intimated his intention of giving a park to the people of Longton. The land forms a portion of his estate near Trentham, and is known as Cocknage Wood. The plans are already being prepared, and the land will shortly be laid out.

Paddington.—On the 28th ult. a meeting of the inhabitants of Paddington was held at the Vestry-hall, for the purpose of urging the desirability of securing an open space of ground in the north-west portion of Paddington, situated between Portsdown-road, Shirland-road, Kilburn Park-road, and Sutherland-gardens, as a place of recreation for the population of the adjacent neighbourhood, which consists of about 100,000 persons, chiefly of the working-classes. Resolutions were passed declaring the necessity for open spaces, and memorialising the Metropolitan Board of Works for assistance in securing the spot referred to, which has been advertised to be let for building purposes.

ARBROATH ABBEY CHURCH.

SIR,—As the architects of the alterations on Arbroath Abbey Church, referred to in a somewhat ambiguous paragraph in your last week's issue, permit us to state that the church operated upon is a comparatively recent building.

It has been found necessary to increase the accommodation, and in so doing the pews have been reversed and the gallery staircases placed outside the original building and enclosed by temporary brick walls.

When funds permit, these walls will be removed and stone substituted.

In the meantime, any attempt at architectural effect is confined to the interior. MACLAREN & AITKEN.

Roman Catholic School Chapel, Mansfield, Notts.—A new school chapel, to accommodate about 250 sittings and children respectively, has been erected adjoining the convent of Sisters of Mercy, the Manor House, Mansfield, from the design of Mr. C. G. Wray, architect, and has been recently opened. The school is built of red bricks, with Mansfield stone bands and dressings, and the front has an ornamental belfry surmounting the gable. The roof internally is open to the collars. Mr. W. A. Vallance, of Mansfield, was the contractor.

ARCHITECTURE POPULARISED.

SIR,—It is a lamentable fact in connexion with the architectural profession that every petty builder may dub himself an architect, and practise as such without fear of restraint, although devoid of all necessary qualifications.

On scientific and sanitary grounds this is to be deplored. Artistically, these usurpers soon find their level, and sink into comparative insignificance. Although debarred from practising in the higher walks of the profession, they still largely monopolise that architectural field where a popular appreciation for art should have its roots, viz., in the houses of the people. It will be difficult to popularise architecture whilst the great bulk of the middle-class dwellings are devoid of architectural pretensions. One great advantage would accrue to the profession if architecture could be rendered popular as a study amongst the people, viz., these usurpers of architectural honours would soon disappear before the criticism of an appreciative and enlightened public. Many architects would no doubt deprecate the notion of popularising the study of their art, prompted by a fear that the amateur would ultimately excel the professor. In some this would not be a groundless fear. That such a feeling should disquiet and drive to desperation all those who play at architecture is no cause for wonderment when we remember that one of the greatest of modern sculptors and artists was himself troubled at a proposal to popularise art. The Earl of Elgin, in one of his letters, says,—"I have never failed to entertain, and to express on every suitable occasion, a very strong conviction that the remains of Athenian sculpture, now in the British Museum, ought to be removed to a situation of more general resort, chiefly on the principle, so applicable to the circumstances of society in England, of the advantage, or indeed necessity, of elevating the taste of the employers, if it is attempted to improve the style and productions of art with us." . . . . "I well remember Flaxman's objections to my views, which originated, it afterwards appeared, in the very natural apprehension, that were the style of the Parthenon decorations admitted as the guide at that time, his own eminence would run some risk from it."

Architecture, to become a popular study, must be presented as an art devoid of technicalities, and without too much science. So soon as the populace could discriminate between the good and the bad in architecture, we might then hope to see the ranks of the profession number only such as were excellent. All architects would then consider the attainment of perfection in their art as "no honour to have it, but a dishonour not to have it." Our architecture would be purer, and aim at greater consistency from having to undergo more crucial tests and critical comparisons. It has been truly said that "that art which challenges criticism must always be superior to that which shuns it." Architecture popularised would tend to foster a commendable national pride for the acquisition of the best that the art could produce. Public opinion would then decide as to the merits of contemplated national structures, and we should not have the mortification of again seeing talent compelled to prostitute itself to the whimsical demands of individual caprice. Another advantage to be gained from a popular appreciation of architecture would be the stamping out of that baneful "utilitarianism" so prejudicial to the true interests of art. To look at the great bulk of our dwellings, it could almost be conceived that a royal mandate had gone forth through the land ordering all houses to be stamped with the broad arrow of "utilitarianism." Popularising architecture would eradicate the quacks, and at the same time augment the ranks of the profession with real and genuine art-workers. This would cheapen good art, but we should have a greater and ever-increasing demand for all such works as were consistent and beautiful.

The intention, when popularising architecture or the sister arts, is not to make every individual an architect, painter, or sculptor, but to create in the minds of the populace an appreciation and reverence for the best artistic productions; to cherish, in fact, a national feeling similar to that ascribed by Ruskin to the Mediævals when he says that "nothing is more notable than the confidence of the builders in the respect of the people for their work. A great school of architecture cannot exist when this respect cannot be calculated upon, as it would be vain to put fine sculpture within the reach of a population whose only pleasure would be in defacing it."

The study of archæology might have been made a potent auxiliary in aiding the advancement of art-culture, whereas it has done little more than instil into the minds of its votaries a slavish adoration for all that possesses the questionable merit of being *old*. Things are not sought after because of their intrinsic beauty or superior excellence, but merely in consequence of their age. In cases where modern superiority is self-evident, it is conceded with reluctance by the veteran archæologist. The study of architecture archæologically is inseparably connected with history. It remains a question, however, whether, when popularising this study, it should not take the form of a systematic course of general artistic instruction, devoid of particular local associations. The mere curiosities of architecture arising from accidental causes, such as locality, general and particular historical associations, are readily accessible to the public through the medium of guide-books; but visitors to Salisbury and Amiens Cathedrals have no standard of excellence whereby to compare the artistic merits of the two edifices, or to discover wherein consists artistically the superiority of either.

I could conceive it possible to teach architecture as an art in a popular way by means of a series of well and carefully selected parallels. It is not sufficient that you teach the people what is good in art, but you must likewise familiarise them with that which is bad, and thus enable them to avoid error. By a series of parallels, the beauties of buildings of acknowledged merit and standards of excellence could be clearly defined and compared with other structures where deviations had been made resulting in other and varied combinations, or in actual blemishes. Where architecture is to be studied scientifically, and as a profession, it is well to begin early; but in cases where an insight into its artistic capabilities is alone required, with a view to increasing the appreciation and zest for architectural embellishment, it were well to wait until the understanding be matured before entering upon the study. The study of art, to be accompanied with pleasure, should be voluntary and not forced, and for this reason the introduction of architectural studies at school is of questionable advantage. The interests of art would not suffer by this arrangement; for, as a rule, it is not the youthful portion of the population that encourages and patronises art. As already stated, it is not required to teach architecture to the masses as a professed science, "but what ought to be taught, are the first principles of design as the groundwork of taste and feeling in art, and a familiarity with the best productions of antiquity, their peculiar characteristics and attributes, and the principles, whether moral or physical, on which the ancients cultivated the fine arts in such endless profusion and variety of material, and in all attained an equal degree of perfection." The notion of dinning artistic precepts into the youthful mind is somewhat reprehensible, and should not be attempted until the understanding is sufficiently awakened to comprehend the deeper significance of art.

Many of the beauties of ancient and modern classics are lost upon the man, owing to the youthful mind having been satiated with them at college or school. "The youth has lost all feeling for the real beauties of the books he reads, because they are only put into his hands to teach him a knowledge of words, of long and short syllables, of accents, and the varieties of dialects." From this cause Byron contracted a great abhorrence for Horace. How many of the sublimest passages of Shakspeare pall upon the appetite from too early familiarity?

A correspondent of the *Builder* has recently shown the absurdity of preaching too much art, as it will ultimately satiate with too much familiarity. There exists, however, around the study of architecture a peculiar charm apart from any theories of art. As an archæological study it constitutes one of the most fascinating inquiries, and whether we trace its progress through ancient or modern times, it is so inseparably connected with all that is remarkable in the world's history that every man of liberal education should count a knowledge of architecture as necessary as the acquisition of two or three dead languages.

I trust that you, sir, will not flag in your endeavours to popularise architecture, which all would study could they but conceive how it "embraces all that is beautiful in art," whilst it "refines and regulates our perception of beauty."

JAMES GEO. BUCKLE.

THE LONDON TRAMWAYS COMPANY.

RELAYING THE TRAMWAYS.

THE London Tramways Company have resolved upon following the example of the great railway companies, by relaying the whole of their lines on the south side of the Thames with steel rails, at an outlay, it is stated, of upwards of 30,000*l*. The first section of the work is now in progress, and comprises the relaying of the road between Westminster Bridge-road and Kennington Park, a distance of about two miles in length. This roadway is being reconstructed with steel rails and new granite pitching, of a very superior quality, the law placing upon the company the work of repairing the roads travelled by the tram-cars. The work is being carried forward without the traffic being interfered with, temporary sidings and shunting-points having been laid down at different parts of the road. About one half of the work has already been completed, and when finished the relaying of those portions of the company's system, between Kennington Church and Water-lane, Brixton, and Clapham-common, will be entered upon, and likewise in succession the several routes between Blackfriars and Walworth and Camberwell roads, Peckham-road to New-cross and Greenwich, and also between the Elephant and Castle and New and Old Kent roads. We understand that the company have determined to abandon altogether the asphalte pavement and adopt granite exclusively, as being more substantial and durable. Messrs. Mowlem, Burt, & Co. are the contractors, and have a large number of men employed upon the works. Although the first outlay will involve a heavy expenditure, the directors calculate that there will ultimately be a great saving and other advantages in the duration of steel as compared with iron rails, the several railway companies having found from experience that steel will last ten times as long as iron. The company are likewise expending a considerable sum in new depôts and stabling at different points along their lines. They have bought ground and are building a depôt at Bowles-road, off the Old Kent-road, which will accommodate 26 cars and 160 horses. Additional stables and fittings are also being erected at the railway-arches at Peckham. At a meeting of the company recently held, the chairman stated that the estimated expenditure on the permanent way and renewals during the next three years was 27,000*l*. The renewals on the Brixton-road would cost 11,000*l*.; the Kensington-road, 7,400*l*.; and the Walworth and Camberwell roads about 10,000*l*.; but they were not afraid to meet such an outlay spread over that time, and he felt that even with their present earnings they would be able to give the shareholders a 9 per cent. dividend in February next, making 6 per cent. for the year.

THE DRAINAGE OF THE THAMES VALLEY.

THE scheme of Mr. Haywood, engineer and surveyor to the Commissioners of Sewers, for the drainage of the Thames valley, which has been accepted by the Drainage Board, is one of twenty-five plans which was submitted to the Board. Four of the schemes contemplated carrying away the sewage to the sea; twelve proposed a system of irrigation; three of the schemes involved the precipitation and filtration principle; and two the precipitation principle only. Mr. Haywood's scheme, which the Drainage Board have decided to carry out, involves the irrigation system, and its estimated cost is 268,000*l*. Mr. Haywood's plans contemplate the purchase of 700 acres of land situated on the banks of the Mole and the Ember, about a mile from the river Thames. On a portion of the land so to be purchased pumping-engines and tanks will be erected, and into these tanks the sewage will be raised, the solid and fibrous matter being allowed to deposit. The sewage will then be purified by distributing it over the ground, which will be prepared to receive it by deep drainage. No chemical process with the sewage is contemplated. The main sewer for the district will be on the Surrey side of the Thames, and will pass through the several parishes of Thames Ditton, Long Ditton, Surbiton, Kingston, Ham, Petersham, Richmond, and Mortlake to Barnes. In addition to the main pumping-engine and station above named, there will also be two other smaller

pumping-stations—one at Ham Fields, and the other at Mortlake, near the Richmond Gas Works. There will be seven branch sewers from the main sewer, at the following places respectively, viz.:—East and West Moulsey and Hampton; Esher; Long Ditton, Kingston-common, and Hook; New Malden, Hampton Wick, and Teddington; Heston and Isleworth; and Kew. The sewers will be of such sizes that Twickenham can be included if desired.

THREATENED DESTRUCTION.

SIR,—I am sure that you and most of your readers will be astonished to hear that there is a proposal to pull down the beautiful little church of Penton-Mewsey, Hants. Can nothing be done to call the attention of the art-loving public to this wanton act of destruction? Penton-Mewsey church is simply the most perfect little fourteenth-century village church in England. It has been very carefully illustrated in "Weale's Architectural Papers," from drawings made by Mr. Street. H. W. BREWER.

BRIGHT BUOYS.

SIR,—Permit me to make a suggestion through the medium of your widely-circulating journal,—a suggestion which concerns the Trinity House, electricians, and all seafarers. It appears to me that the time has come when every buoy, along our rivers, channels, and coasts should be "lights." They might possibly be made self-illuminating if a pile of the proper kind were placed in their "holds." Will Mr. Edison, or some of our own physicists, both in the interests of humanity and of property, take this matter in hand? W. C. T.

SHORT TIME IN WINTER.

SIR,—It is devoutly to be hoped that the present depression in trade will enforce on all (employers and workmen) a better regard to economy, not only in their expenditure, but in the cost of production. There is a matter in the building trade especially which I think should be immediately altered. I mean as to the great loss arising from the pretence of carrying on building works without light. The hours of work on buildings and in open sheds are from seven a.m. to five p.m. in winter, with a deduction of one hour and a half for meals. It is perfectly obvious to every one that, from Christmas-day to nearly the end of January there is no daylight before eight a.m., and it becomes dark soon after four p.m. I am perfectly confident that, during these short days, there is a daily loss of from one hour to two hours by men merely pretending to work, or something like 5*l*. per day for every hundred men employed.

I therefore suggest that, from Christmas-day to the last Saturday in January, the hours of work should be from 8 a.m. to 4·30 p.m., allowing half an hour for dinner, so that the men would work (including Saturdays) forty-four hours per week, which is all the time they could possibly see. I think there would be an advantage to the workmen in the alteration, because the public would feel that they would only pay for the actual time worked, whereas under the present system, knowing that they will have to pay for hours not worked at all, every work possible is postponed until February.

A RETIRED BUILDER.

COFFEE TAVERNS.

SIR,—Your known advocacy of a vast range of movements tending to improve social life and order encourages me, while I see on my desk your account of the opening of a new coffee tavern to write in the hope that I may induce you to join in urging legislation on this subject, which shall require all licensed houses to supply their customers with coffee, cocoa, and other unintoxicating drinks and refreshment, in addition to the intoxicating drinks for the sale of which they are licensed.

We are all professionally familiar with the great commercial value a licence gives a house, at times trebling, quadrupling, or still more largely multiplying its previous value. Such a gift of the Legislature, therefore, as a licence should make the imposition of a requirement to furnish unintoxicating drinks of a good quality, in cups, at a reasonable price, together with the further supervision the requirement might involve, not burdensome; while the immediate scattering all over the country, not only beside the publichouses, but within their very walls, of a means of procuring unintoxicating drinks and refreshment, would, in my opinion, surpass in its good effects the results of the unaided efforts of the Coffee Tavern Company, if carried on for a century.

An old man, a foreman of works and a teetotaller, relating to me his efforts to preserve his weaker brethren from drink, told me that a sobriety of three or four months' duration, or longer, if broken down, was almost invariably so broken down by the social desire inspired by the less abstemious to drink and give "a glass." In such cases of temptation of how little avail would a coffee-tavern be; but if, besides the glass of beer or gin, tea, coffee, and cocoa could be as readily procured, there would be yet a chance of preserving the lately-acquired habit of the abstemious man. And in the bare name of right and justice we should surely not ask less of him who, to his own great gain, is licensed to sell that the drinking of which so easily becomes a social pest, than to supply every one with equal readiness the drink and food which will slake thirst and stimulate life without the dreaded danger to the community.

HORACE FIELD.

THE EXHIBITIONS OF THE SANITARY INSTITUTE.

SIR,—Previously to the Exhibition at Leamington last year I received a communication from Mr. Robinson to the effect that it was not the intention of the Council of the Social Science Association to hold an Exhibition at Aberdeen. Mr. Robinson at the same time recommended to us the gentleman who had assisted him in getting up his former Exhibitions, and very kindly offered to place at the disposal of the Institute any information in his possession. Again, before the recent Exhibition was opened at Stafford, in reply to an inquiry as to whether there would be an Exhibition in connexion with the meeting of the Social Science at Cheltenham, I received a circular from the local secretaries informing me that there would be no Exhibition.

The chief work of the Sanitary Institute consists in the examination and granting of certificates of competence to local surveyors and inspectors of nuisances, and in investigating and reporting upon sanitary appliances and inventions. This part of the work of the Institute is of great public importance, and does not come within the scope of any other society with which I am acquainted.

I feel it necessary to make these few additional observations in the hope that I may remove any wrong impression that your article may have created as to the object which the Institute has in view. The just importance which is attached to anything that appears in your valuable journal will, I hope be a sufficient apology for my asking you to find a space in your next issue for this communication.

LOBY MARSH, M.D.

RAILWAY FARES.

SIR,—In a recent number you had an article on railway traffic returns: if you would allow me to say a few words on the subject in your columns it would oblige. I have for some years spent a fair amount in travelling, almost entirely for pleasure, and, as my means increased, I had a desire to travel second instead of third class, and finding that for return-tickets in day excursions the difference was trifling, I did so. However, the first time I had to undertake a long journey I was most effectually deterred going second class. I found that the third-class fare was 10s. 1d., the second was 18s. Such a difference seemed to me utterly monstrous in its absurdity. I feel confident that were there only a sensible and reasonable difference between second and third class fare, say from 10 to 15 per cent., or even as high as 20, second class would be patronised to so much greater an extent that the railways would earn hundreds of thousands more per annum than they do now. I find on looking over the "A, B, C," that the normal difference between these two classes is from 50 to 80 per cent. A TRAVELLER.

IMPERFECT VENTILATION.

A QUESTION.

SIR,—Will you kindly, through the medium of your valuable journal, oblige me with giving publicity to the facts of the following case, in the hope that it may elicit from some of your readers some practical suggestions for remedying the evil.

The building was erected for public worship in 1876, and will seat about 1,000 to 1,100 persons. Soon after it was opened, it was discovered that a very strong draught swept round the gallery, and was slightly felt in the body of the chapel. This draught is seldom felt until the place is filled with people. It appears as if the air rushed into the building and was unable to find an exit; even the opening of the windows is of no avail, but, if anything, tends to increase the draught. The only ventilation in the building is under the gallery, where a number of ventilators are fixed in the walls.

The architect's idea apparently was that the sun-burners in the ceiling would act as ventilators (as there is between the ceiling and roof ventilation provided by openings in each gable); but it is very evident that, for that purpose, they are absolutely useless. It has been suggested that a large ventilator should be fixed in the centre of the ceiling between the sun-burners, or that ventilators should be placed in the walls close to the ceiling; but the trustees are unwilling to expend money simply on experiments, and they would like to know, before they attempt an alteration, if it is likely to succeed. I should, therefore, esteem it a great favour if some of your numerous readers would kindly suggest something which would remedy the very bad ventilation of this building.

M. J. W. CHAMBERLAIN.

ARCHITECTS' ACTIONS.

LAWRENCE *v.* CRANCH.

THIS was an action brought in the Newport County Court by Mr. B. Lawrence, architect, to recover 40*l*. from Mr. R. L. Cranch, book-keeper at the Old Bank, Monmouth, the amount agreed upon for plans and specification which the plaintiff had prepared at defendant's request.

In the month of December last the plaintiff went to Monmouth, at defendant's request, to confer with him about building a new house in the Old Hereford-road. Defendant said he was ready to spend about 800*l*., and plaintiff agreed to do the usual work of an architect,—making plans and specification, and superintending the work,—for 40*l*., whether the building cost 800*l*. or more. Defendant gave plaintiff a sketch of his own ideas as to what he required, and plaintiff prepared plans and specification, which he sent to the defendant. Various alterations and additions were made by the defendant, who required more expensive work, and when the plans were altered and tenders obtained, the cost was more than double the sum which the defendant in the first instance said he was prepared to spend. Then the defendant said the plans were of no use to him, that he could not build, and he asked the plaintiff for compensation for the loss of time which he (the defendant) had sustained in meeting the plaintiff so many times.

After the plaintiff had been examined, Messrs. G. Jones, H. B. Sketch, C. Miles, and J. Linton, builders, Newport, were examined as to the carrying out of the work. The first set of plans, they said, might have been carried out for between 800*l*. and 900*l*., and the altered plans for between 1,300*l*. and 1,400*l*.

Mr. Carter said the defence was that the defendant had received no benefit from the plans, and the plaintiff had no right to recover. The defendant was examined, and stated that he told the plaintiff he wanted a house built for 800*l*. He asked plaintiff what his commission would be, and he said he would do the work for 40*l*. Plaintiff never said there would be any additional cost. When the plans were finally agreed upon, defendant advertised for tenders, and received three—the lowest being 1,785*l*.

His Honour said he was of opinion that the defendant had failed to show that the house as first planned could not have been built for 800*l*. Defendant must have been aware that the alterations ordered would add very much to the cost of the house, and, therefore, although it would have been right and prudent for the plaintiff to have warned him as to the additional cost, he could not think that defendant was entitled to judgment. His Honour, therefore, held that the plaintiff was entitled to judgment, and he thought there was sufficient to justify him in giving the plaintiff 20*l*., half the original sum for plans and half for superintendence, and he thought the plaintiff should have sued for that amount and no more. Judgment for 20*l*. and the usual costs.

FALSE TIME-SHEETS.

AT Worship-street, Michael Hickey, 53, of D'Eynsford-road, Camberwell, was charged before Mr. Hannay with falsifying documents with intent to defraud. Mr. Besley, barrister, appeared for the prosecution; Mr. H. M. Ogle, solicitor, defended. The evidence showed that the prisoner was in the employment of Messrs. Colls & Son, builders, of Moorgate-street and Camberwell. They were executing work in Great Eastern-street, Shoreditch, and the prisoner was engaged under contract to erect some staircases. The documents he was charged with forging were "time-sheets" of men under him. The "time-sheets" were forms supplied to the men by the prosecutors, and were filled up by the men with the number of hours each day they worked. They were then handed to the prisoner, who presented them at the office, where, after they had been examined, he received the money. Two men named Taylor and Jemmett deposed that they were engaged by the prisoner at 8d. an hour. The "time-sheets" put in by the prosecutors showed that the prisoner, on the 4th, 11th, 18th, and 25th of October, had charged 9d. an hour for each man, putting the difference between what he received and what he paid—a total of 1*l*. 11s. 11d.—into his own pocket. The prisoner was fully committed for trial to the Central Criminal Court.

IMPORTANT TO OWNERS OF HOUSE PROPERTY.

THE VESTRY OF SHOREDITCH *v.* COOK.

AT the Worship-street Police Court, on the 7th inst., Mr Robert Charles Cook, a builder, of 32, Norton-folgate, was summoned before Mr. Bushby by the Vestry of the parish of St. Leonard, Shoreditch, for having neglected to pay the sum of 67*l*. 11s. 9d., moneys expended by the vestry in executing certain works on houses belonging to Mr. Cook, which the defendant had neglected to do when required.

Mr. Besley, barrister, instructed by Mr. Walker, vestry clerk, supported the summons; and Mr. Horace Smith defended, the case being fought on a contention by the defendant that the Vestry had improperly interfered.

The facts were shortly these:—

The defendant had bought, in August, 1877, a block of twenty houses in Pointer's-buildings and Norfolk-gardens, Shoreditch. The houses were in a very bad condition, and for some time previously the Vestry had been serving notices to have certain works done upon them. Mr. Cook admitted that he knew this at the time of his purchase. Subsequently, the Vestry served a number of notices, pointing out the work required, particularly with reference to the removal of four cesspools upon the property, and the drainage of the houses into the sewer, the state of the houses being a nuisance and injurious to health. Matters went on until February last, very little having been done by three men who had been set to work, and that work done unsatisfactorily, a cesspool having been partly emptied and left open till the next day. In February, the Vestry, fearing the consequences to the surrounding neighbourhood, entered into a contract for the necessary work, and then, in pursuance of several notices given to the defendant,

sent a gang of men on to the premises and did the work required, the cost amounting to 67*l.* 11s. 9d.

Mr. Horace Smith contended that the work was not such as was contemplated by the Building Act, and therefore that the Vestry were not empowered to act as they had done, but Mr. Bushby overruled the objection.

Evidence was offered, for the defence, that the work had been commenced by the defendant; but after hearing several witnesses *pro* and *con.*, Mr. Bushby said that the whole case involved only one point,—whether the defendant had with reasonable despatch carried out the work required by the Vestry, and whether such work was necessary to be done. As to the latter he had not the least doubt. It was shown that there was one cesspool to four houses, and no connexion with the main sewer, that the soil of twenty years had accumulated there, and the pipes for surface-drainage ran into those cesspools. Mr. Bushby thought the Vestry were not wrong in coming to the conclusion that the work was not being done with reasonable despatch, and that they were quite within their powers in entering the premises and doing the work themselves. He gave judgment for the Vestry, and ordered the defendant to pay the amount claimed, which, it should be stated, the Vestry proved they had actually expended, and also allowed 5*l.* 5s. costs.

ENGINEERS' CERTIFICATES.

RANKIN *v.* THE NEW BRIGHTON AQUARIUM CO.

THE plaintiffs in this case (tried at the Liverpool Assizes on the 7th inst., before Mr. Justice Manisty and a common jury) were Messrs. Rankin, ironfounders and contractors, Liverpool, and they sought to recover 659*l.* 15s., alleged to be due under a contract made with the defendants, to carry out certain work in the construction of an aquarium, baths, and hotel, at New Brighton. Two sums of 785*l.* 15s. and 659*l.* 15s. respectively had become due under the contract, and had been certified for by Mr. Lynde, the engineer of the company. The plaintiffs under a writ obtained payment of the first-mentioned sum by a judge's order, and leave was given to the company to defend the action with respect to the 659*l.* 15s. on the payment of 500*l.* into court.

The defendants pleaded that their engineer had no right to give certificates so as to bind the company, and they also made a counter claim against the plaintiffs for damages consequent upon alleged negligence in carrying out the work. The contract made with Messrs. Rankin was for 4,845*l.* 2s. 9d., but originally it was for a larger amount, and was reduced upon the company resolving not to carry out such extensive works as they at first had decided upon.

After the case had been opened, it was agreed that all matters in difference should be referred to an arbitrator, the defendants agreeing to pay a further sum of 250*l.* into court, and admitting their liability to pay a fair value for the work already done.

BREACH OF CONTRACT.

CARTER *v.* STRANEY.

IN this case, which came before Mr. Justice Fry and a common jury, at the Liverpool Assizes, on Tuesday, the plaintiff sought to recover 140*l.* alleged to be due by the defendant on a contract to deliver and put up a certain engine and mortar-mill for the plaintiff. There was a counter claim by the defendant for breach of contract. The plaintiff, William Carter, carries on business as a builder's ironmonger in Birmingham, and the defendant, James Straney, is a builder at West Derby.

The plaintiff's case was to the effect that the defendant agreed to purchase for him an engine and mortar-mill for 144*l.*, the machinery to be fitted up in Liverpool. A contract was signed, but the defendant afterwards declined to accept the machinery, on the ground that a tank and shafts were not supplied, and that the wheels were defective.

The plaintiff, on the other hand, denied that there was any agreement to provide a tank and shafts, and brought his action for the recovery of the amount agreed upon.

The jury gave a verdict for the plaintiff for the amount claimed.

GLASGOW INSTITUTE OF ARCHITECTS AND THE PROPOSED BUILDING REGULATIONS.

THE Glasgow Institute of Architects have intimated a number of objections to the proposed Provisional Order by the Police Board for the regulation of buildings. They object, first, to any alteration of the Police Act in this direction, because they are unanimously of opinion that the question can only be satisfactorily dealt with by a comprehensive Building Act, clearly defining what may be justly demanded for the public good, and so altering the constitution as well as the jurisdiction of the Dean of Guild Court as to afford some reasonable assurance that its efficiency, or, what they would prefer, transferring its functions to a new and proper judicial court; and on the general ground that the alterations proposed are in most points deficient in precision, leaving matters of great importance to the discretion of the Master of Works for the time being. In particular they object to the clause making the ceilings not less than 10 ft. high, because it is unnecessary, and would interfere with the price of ground by restricting the number of dwellings which might, with all proper regard to hygienic requirements, be erected on it; that the specified widths of passages and stairs would in many cases be excessive; and to the "depth of the foundation," because it would be impracticable. They are of opinion that the words "exclusively belonging to and connected with the land or heritage in which each such apartment is situated," ought to be deleted. They approve of the alterations in the relative position of tenements intended to be secured by this clause, but they strongly condemn any attempt to gain such ends by confiscation. The objections stated were to be laid before Sheriff Clark on Thursday, when the subject of the provisional order was to come before him.

MASTERS AND MEN.

Glasgow.—The Glasgow masons, who number about 1,500, struck work on Monday against a proposed reduction of 1d. per hour.

Manchester.—Notice has been given that at the end of the present week the wages of the operative bricklayers of Manchester and Salford will be reduced 1d. per hour (from 10d. to 9d.), and of builders' labourers ½d. per hour.

Bolton.—The operative stonemasons of Bolton have received notice of a reduction in their wages of 1d. per hour, equal to 3s. 6d. per week, and also to work extra hours per week.

Hawick.—The master joiners of Hawick have intimated to their men that on and after the 1st of December their wages will be reduced from 7½d. to 7d. per hour.

Banbury.—At a meeting of the master builders of Banbury and neighbourhood, Mr. A. Kimberley in the chair, it has been unanimously agreed that, owing to the depressed and stagnant state of the building trade, a reduction of 1d. per hour should be made upon the carpenters' and joiners' wages, and also a corresponding reduction upon all other mechanical branches of the trade. It was also further agreed that a reduction of ½d. per hour should be made upon the labourers' wages. The reductions are to come into operation not later than the 30th inst.

Aberdeen.—At a meeting of the Aberdeen Master Masons' Association, on the 8th inst., it was unanimously resolved, in consequence of the continued depressed trade, to reduce the standard rate of wages to 6d. per hour on and after 8th February next.

Forfar.—In the case of the masons' strike at Forfar, an arrangement has been come to, the men accepting ½d. of a reduction, making the wages 7d. per hour, with weekly payments. The proposal of the employers was to reduce the wages to 6½d. per hour.

Crieff.—The master joiners of Crieff have again reduced the wages of the operatives 0½d. per hour, the rate now paid being 6d. per hour.

Partick.—The Partick masons, to the number of about 200, struck work on Monday, against the reduction of 1d. per hour sought to be imposed by the masters. It is stated that some of the masters offered "to split the difference" by giving 7½d., but this was not accepted by the men.

The Welsh Slate Quarries.—At the Penrhyn, Llanberis, and other large quarries in North Wales, the "bargains" or contracts taken by the workmen, were, on the 8th inst., let at a reduction averaging from 20 to 25 per cent. The reduction is stated to have been necessary owing to the accumulation of stocks and the dulness of the trade, which, it is said, is in some degree traceable to the importation of American slates, and the North Wales Quarrymen's Union advised its adoption by the men, who were in favour of shortening the hours of labour. At the Rhos quarry, Bettws-y-Coed, the strike has now extended over fifteen weeks.

Shrewsbury New Brigade Depot.—These buildings are now rapidly approaching completion, and will shortly be ready for occupation. The works have been visited by General Sir J. Lintorne A. Simmons, K.C.B., Inspector-General of Fortifications and Works, Colonel P. Ravenhill, C.B., Deputy-Director of Barracks, and other officers. After completing the inspection, Sir Lintorne addressed the contractor (Mr. Treasure), expressing his approval of the way in which the work had been done. The buildings have cost about 50,000*l.*

STAINED GLASS.

Sandringham.—The Prince of Wales has caused a painted window to be inserted in the north wall of the chancel of Sandringham Church, in memory of the late rector of the parish and chaplain of the royal household. The window consists of a single light, the subject being Christ stilling the Waters. On the south wall of the chancel, within the communion-rails, has also been fixed a brass tablet bearing the following inscription:—"In memory of William Lake Onslow, M.A., rector of Sandringham, chaplain to their Royal Highnesses the Prince of Wales and the Duke of Edinburgh, Chaplain and Naval Instructor, R.N., who departed this life 30th August, 1877, aged 57 years. This tablet is placed by his friends afloat and ashore, to record their high esteem and affection for one who, while faithfully discharging his various duties, endeared himself to all by his kind and gentle disposition." In the south wall is another painted window, in memory of the Prince's late Equerry, Colonel Grey, the subject in this case being David slaying Goliath.

Maidenhead.—Two lights of the east window of St. Mark's Church, Maidenhead, have been filled with stained glass by Messrs. Clayton & Bell, in memory of the late Mrs. Malyon, who for twenty-nine years discharged the duties of matron of the union workhouse. The subjects represented in the first light are the Baptism and the Nativity of our Lord; and in the second light the Crucifixion and Presentation in the Temple.

Stoke d'Abernon.—A new stained-glass window has just been uncovered at the parish church, Stoke d'Abernon, Surrey. It is in memory of the late Mr. W. H. Cooper, and has been designed by Mr. N. H. J. Westlake, F.S.A., of the firm of Lavers, Barraud, & Westlake. The subject is the Resurrection of the Just.

Fulham.—Messrs. W. M. Pepper & Co., of the Euston-road, have just completed nine stained-glass windows for St. James's Church, Fulham. Three of the windows contain figure-subjects, representing respectively "The Good Shepherd," "Raising the Widow's Son," and "Raising Jairus's Daughter."

CHURCH-BUILDING NEWS.

Dumfries.—St. Mary's parish church, Dumfries, has been re-opened, after alterations and re-seating. The works were designed and carried out under the superintendence of Messrs. Crombie Brothers, and the tradesmen who executed the work were Mr. Tweedie, Annan, joiner work; Mr. M'Teer, Dumfries, painting; and Mr. Gregan, Dumfries, upholstery.

Whilton.—The new chancel at Whilton Church was consecrated by the Bishop of Peterborough on the 30th ult. The work has been carried out by Mr. Gee, of Daventry, according to the plans of Mr. St. Aubyn, architect. In place of the former unsightly projection, — some "improvers" having destroyed all the original architecture,—there is now presented to view a chancel 25 ft. long by 16 ft. wide; there are an organ-chamber and vestry on the north, and an aisle on the south. The roof is of pitch-pine; and the choir-seats are of the same material. The east window has three lights, and the one on the south two lights. The altar-table, lectern, and pulpit are all of oak; the last mentioned having a Bath stone base, and Robin Hood steps. The chancel is paved with Godwin's tiles; and the roof is covered with Broseley tiles. The south chancel aisle is 12 ft. long and 6 ft. wide, and the vestry 16 ft. by 7 ft. The cost of the work already performed is about 1,300*l.*; but it is intended to proceed in the spring with the restoration of the nave and aisles. Rimington's heating apparatus is to be used.

Woodford Halse.—The parish church of Woodford Halse was re-opened on the 29th ult., after restoration, under the direction of Mr. A. Hartshorne, architect. The oldest part of the church, consisting of the north aisle and chancel, is of the early part of the fourteenth century, but the north aisle was so dilapidated, and leaning so much, that, with its arcade, it had to be pulled down and rebuilt. The entire clearstory has also been rebuilt. The tower was in a ruinous state, and it has now given place to a new one, somewhat larger. A large western arch has been added, with a new window and doorway in the tower, corresponding with the style of the north aisle. The roofs of the whole church are new, that of the nave being raised to its original pitch. A new porch to the south aisle has been

built, and also a new vestry and organ-chamber on the north of the chancel. The carved panel tracery of the old oak seats has all been preserved, and used again as far as possible. A recumbent effigy of a lady was found, buried at a short distance underground, when clearing the ground for the new vestry. This has been placed, at Mr. Hartshorne's expense, in a recess in the chancel. It is of about the date of Edward II., and is in very good preservation, with the exception of the feet, which have been broken off. The total cost of the restoration was about 3,500*l*. Messrs. Wall & Hook, of Brinscombe, Stroud, were the builders, and Mr. Hayward was clerk of works.

Cambridge.—The memorial stone of the nave of St. Barnabas Church, Mill-road, Cambridge, was laid on the 26th ult., by the Earl of Hardwicke. Mr. W. Smith is the architect, and Mr. F. Thoday is the builder.

Chastleton.—St. Mary's Church, Chastleton, was re-opened by the Bishop of Oxford on the 31st ult., after restoration. The church, which dates from Norman times, contains a tablet to the memory of Sir Richard Westmacott, the sculptor, who is buried in the churchyard, and to his son Horatio, a rector of the parish. The works now carried out include the entire removal of the gallery and of the old pews, the latter being replaced by comfortable low oak seats. A stained-glass window representing the four Evangelists has been put in the south chantry by Miss Whitmore Jones, in memory of her father, the late Mr. Whitmore Jones, the glass being supplied by Mr. J. T. Carter, of London. New oak panelling has also been put in the south chantry by Miss Jones. A new panelled oak roof has also been placed in the south chantry, in the carved bosses of which the arms of the various owners of the demesne are represented. In taking up an old pew in this chantry a piscina was discovered by the builders, while in one corner the rood-loft door was also discovered. The lectern is the present of the villagers. The old pulpit, which is Jacobean, and bears the date of 1625, has been re-erected on a new stone base. Under some of the old pews and in the gangways a number of old tiles were found, and have been replaced, according to their respective patterns in a part where they will not be much trodden upon. A new piscina has been placed in the chancel, the gift of the rural dean (Rev. W. E. D. Carter). This, with the cleaning, &c., of the masonry, constitutes the extent of the restoration, the work having been carried out (under the supervision of the architect, Mr. C. E. Powell, of London) by Messrs. Groves, of Milton, the estimated cost being 900*l*.

Feltham.—The foundation-stone of the new church of St. Catherine, in the parish of St. Dunstan, was laid on the 8th inst. by Archdeacon Hessey (archdeacon of Middlesex). The architects are Messrs. Carpenter & Ingelow, and the builder is Mr. C. F. Kearley, Uxbridge.

Ipswich.—The new organ-chamber in St. Stephen's Church, Ipswich, has been completed. It is 13 ft. by 7 ft., internal dimensions, and has been erected on the north side of the chancel, with a stone arch and shafts, corresponding in position and detail with the arches of the present chancel aisle. The floor is raised 6 ft. above the present chancel floor, and the interior of the chamber is boarded. On each side of the arch, and fixed to one of the shafts, are carved memorial brasses, bearing an inscription stating that the work was executed at the cost of Mr. Alexander Francis Nicholson, in memory of his three daughters. The brasses are the work of Messrs. Hart, Son, Peard, & Co., and were executed from special designs supplied by the architect, Mr. E. F. Bisshopp. Internally, the walls are faced with small whole flints, and the roof tiled. Messrs. J. B. & F. Bennett were the general contractors, Mr. Chinnock doing the stonemason work, and Mr. Coe the hot-water work. A new organ is being built by Mr. A. Hunter, of London.

Halkyn.—The new parish church for Halkyn was consecrated on the 29th ult. It is dedicated to St. Mary the Virgin, and has been erected at the sole cost of the Duke of Westminster. The style of the new building is Early Geometrical. The plan of the church, which provides accommodation for about 300 people, consists of nave, north aisle, chancel, and tower, which is placed at the north-east end of the building. The general work, both inside and out, is executed in local stone, and white stone from the Talacre quarries is used for the finer portions. The tower is square on plan, 26 ft. each way, and about 65 ft. high to the battlements, from which a slated roof rises to a further height of about 16 ft. All the roofs are covered with small Westmoreland slates. Internally the nave is divided from the aisle by means of an arcade of circular shafts and moulded arches. The shafts are of polished Halkyn limestone, or Halkyn marble, as it is generally called. The vestry and organ-chamber are placed under the tower, the walls of which are pierced with large arches towards the chancel and the end of the aisle. For the nave and aisle windows rather an unusual treatment has been adopted. All the windows contain figure subjects, but instead of being carried out in different colours, the prevailing tone is a quiet brown, most of the work being executed in this tint on a white ground, bright colours being very sparingly introduced. The windows in the nave have subjects illustrating the life of our Lord, and the side windows in the chancel contain representations of the twelve Apostles. The different tradesmen who have been employed upon the work are as follow:—The whole of the masons' and wallers' work, Messrs. Edwards and Thomas, Halkyn; joiners' work, Messrs. Parry & Aidney, Halkyn; slating, Mr. Lee, Chester; plumbing, Mr. Isaac Williams, Chester; lighting, &c., Messrs. Hart, Son, Peard, & Co., London; heating, Messrs. Bennett, Liverpool; wrought-iron railings, &c., Messrs. D. Williams & Son, Chester; general wood carving, Mr. Brown, Chester; carving of reredos and stonework, Mr. M'Arthy, London; painted glass and decoration, Messrs. Heaton, Butler, & Bayne, London; clock and bells, Mr. Joyce, Whitchurch; organ, Mr. Whiteley, Chester; the tiling of the aisles and chancel floor, the Campbell Brick and Tile Company. Mr. Robert Pritchard has been clerk of the works from the commencement. All the works have been carried out from designs by and under the superintendence of Mr. Douglas, architect, Chester.

Mold.—The foundation-stone of the new Church of St. John the Evangelist, Mold, was laid on the 30th ult. by the Duke of Westminster. The architect is Mr. John Douglas, of Chester. As at present proposed to be carried out, the church consists of a nave, chancel, and organ-chamber. A tower and spire, placed at the north-east end of the building, form the remainder of the scheme, but at the present it is only intended to build the tower to the height of one story. This will serve as a vestry, and will be covered with a temporary roof, and be completed as soon as funds for the purpose are raised. The nave is 61 ft. 6 in. long and 28 ft. 6 in. wide, the chancel 27 ft. long and 19 ft. wide, and accommodation is provided for about 290 people. The style is Early Pointed, and the materials to be used are local stone in random courses for the exterior walling, red Helsby stone for the dressed work, and buff pressed bricks for the interior walls and arches. The total height of the tower and spire would be about 90 ft. The roof will be covered with red roofing tiles, with ridges of the same material. The contract has been let to Mr. Chas. Holland, of Chester, and the sum to be expended at present is about 2,000*l*.

Rushall.—The parish church of Rushall, near Harleston, was re-opened on the 29th ult., after restoration. It has now an entirely new roof of open timber and pitch pine, covered with green slates. The whole of the walls have been picked off and pointed back, and new buttresses placed to the chancel. The tower has been partly restored, new crosses and copings placed on the roof, and all the stonework renewed. Three new windows have been added to the chancel, and the whole of the windows glazed with cathedral glass. The inside walls have been plastered and stuccoed, and the floors laid with Minton's tiles. The building is warmed with Gedney's improved heating apparatus. Mr. George Grimwood, of Weybread, was the sole contractor; the stonework was done by Mr. Nursery, of Bungay; and the glazing by Mr. Gibson, of Fressingfield. The chancel has been restored at the expense of the Master and Fellows of Emmanuel College, Cambridge, and the remainder of the work has cost 760*l*.

Society of Engineers.—At the last monthly meeting of the Society of Engineers, the following gentlemen were balloted for and duly elected members of the society, viz., Mr. Charles John Alford, Mr. Patrick Doyle, Mr. Isidore Spielmann, Mr. John Greaves Hawkins, and Mr. John Price.

DISSENTING CHURCH-BUILDING NEWS.

Huntingdon.—A new Wesleyan chapel at Huntingdon was opened on the 18th ult. The building occupies the site of the old chapel, and is Gothic in style. The front walls are of Clipsham rough stone, with Bath and Ketton stone dressings, buttresses, and pinnacles. The building will seat 500 persons. At the back are class-rooms, and a spacious schoolroom. The contractor was Mr. G. Thackray, and the architect Mr. R. Hutchinson. The cost has been 2,350*l*.

Stornoway.—The new church erected for the Free English congregation at Stornoway has been opened for worship. The building is situated at the corner of Francis and Kenneth streets, with frontages to both, and has been erected in accordance with designs furnished by Mr. R. A. Bryden, architect, Glasgow. The style is Early English. The principal front of the building is towards Kenneth-street, and the gable is in height about 60 ft., having for its main feature a large and four-light traceried window filled with stained glass. On one side the gable is flanked by a projecting wing containing the staircase to the gallery, and on the other by a tower and spire, the tower only being built at present. The tower rises to a height of 47 ft., and it is proposed to carry the spire to an additional height of 35 ft. The walls are faced with freestone brought from Lochbroom, brownish in colour, and with white Glasgow stone dressings. The plan is oblong, 70 ft. by 50 ft., and sittings are provided in the area for 400, and in the gallery for 230, persons. There is a vestry behind the church. The interior of the building shows a nave and side aisles, with galleries in the latter. The ceiling of the nave is in the form of a lofty arch, and is divided from the aisles by longitudinal groined arches, supported by columns with ornamental capitals. The works have been carried out by local tradesmen—the wright work by Mr. John Baxter, of Glasgow; the plaster work by Mr. A. W. Paterson, Dunoon; and the glazier work by Messrs. C. & J. Malloch, Glasgow.

Guernsey.—A new Wesleyan chapel was opened recently by Dr. Pope. The plan of this chapel is cruciform, having an inside width of 45 ft., the length being 72 ft. The style of the building is Early Gothic. All the windows are of coloured glass. The orchestra and organ-loft are recessed under a Gothic arch at the extremity of the nave. Accommodation is provided for nearly 800 persons. The tower and spire are 112 ft. high. The architects are Messrs. Wilson, Willcox, & Wilson, of Bath. Mr. D. C. Jones, of Gloucester, was the contractor.

SCHOOL BOARD SCHOOLS.

Widnes.—On the 1st inst. new Board schools were opened at Simms Cross, Widnes. They have been erected at a cost of about 9,000*l*., from designs by Messrs. Francis & George, architects, Liverpool.

Gloucester.—On the 24th ult. the first schools erected by the Gloucester School Board were opened. They have been erected by Mr. James Clutterbuck, from designs by Messrs. Medland & Son, architects. Accommodation is provided for 254 infants, 203 boys, and 203 girls. The schools are arranged in two detached blocks, that for the boys (one story high) lying nearest to and parallel with Widdin-street, and that for the girls and infants (two stories high, infants below and girls above) lying nearest to and parallel with Napier-street. Each school-room is 62 ft. 6 in. long by 20 ft. wide, and each class-room 22 ft. by 18 ft. The playground to each block lies on the south-west side. The buildings, which are Italian in character, are constructed with red bricks, relieved by Bath stone dressings. They have cost 3,231*l*.

SCHOOL BUILDING NEWS.

Thetford.—New grammar-schools are being erected here, from the designs of Mr. E. Boardman, architect, Norwich. Mr. Hubbard is the contractor, his foreman being Mr. E. Stafford. Messrs. Peck & Sons have undertaken a large share of the stone work.

Oundle.—The Sunday school in connexion with the Independent chapel at Oundle has been enlarged, at a cost of 450*l*. Mr. Sykes was the architect, and the work was done by Mr. Binder, of Oundle

VARIORUM.

"METALS and their Chief Industrial Applications," by Charles R. Alder Wright, D. Sc. (Macmillan & Co.), is a larger book than it looks; free from all verbiage, it gives in pithy form a very large amount of really good information in a small compass. The book is founded on a course of lectures delivered by Dr. Wright at the Royal Institution last year. It is a very good introduction to the study of which it treats. ——We have intended for some time past to mention that a second edition had been published of "The Parks and Gardens of Paris," By W. Robinson, F.L.S. (Macmillan & Co.), and will not delay longer, though it must be done in a few lines. We reviewed this work at some length on its first appearance, and prognosticated for it the good reception which was accorded it. It is an admirable and beautiful book. It is full of information and suggestion, of which use has not even yet been made. Much of its value depends on this, that in describing the Paris Gardens, Mr. Robinson always keeps in view their relation to the wants of other cities, and of public and private gardens. In showing that the French in their turn may learn from us, the author mentions as a curious fact that rhubarb and seakale have yet to be introduced into France.——"Common Mind Troubles," by J. Mortimer Granville (Hardwicke & Bogue) is a curious little book, the key-note of which is the presumption that there is often, if not generally, a stage of conscious embarrassment preceding mental derangement or mind weakness, which the sufferer may grapple with and overcome if he take it in time. It is quite unnecessary, however, that those who are troubled with "defects of memory," "confusions of thought," or "low spirits," should fancy they are on their way to a mad-house.——The new serial work just now commenced by Messrs. Cassell, Petter, & Galpin, in monthly parts, entitled "Our Own Country," is to be an illustrated, geographical, and historical description of the chief places of interest in Great Britain. The first part includes a steel engraving of Liverpool.——The number of *L'Art* for November 10th contains the concluding portion of M. Viollet-le-Duc's account of the buildings for the Paris International Exhibition. The number is an excellent one.

Miscellanea.

Concrete Drain-pipes at Bournemouth. Reference was made in the *Builder* a month ago (p. 1,027, *ante*) to the alleged failure of a number of concrete drain-pipes at Bournemouth. The local *Observer* states that at a meeting of the Improvement Commissioners, on the 15th ult., a report of the Sanitary Committee was read, stating that Messrs. Donaldson & Ponton's reports on the concrete pipes had been received and read. The committee recommended, amongst other things, that no more concrete pipes be used in the sewers, and that the consulting surveyor be instructed to give the contractor orders to remove all the concrete pipes now on the ground, at once. Mr. Donaldson, in his report, details experiments made by him, the results of which, he says, show that:—

"The quality of these pipes varies between very wide limits. The best specimen of pipes are well able to sustain all the strains to which they would be subjected in ordinary sewer trenches, but the inferior qualities are clearly, by the ascertained results of the Knyveton-road, failures, utterly unfit for use under any circumstances. Unless, therefore, the inferior pipes can be easily distinguished from the pipes of strong material, I feel that I am compelled to advise you not to purchase any more of these pipes. With regard to those you have already purchased, I advise you to subject them to a fair percussive test."

Mr. Ponton, in his report, says:—

"In my opinion, the cause of the failure of the concrete pipes is owing to their weakness to resist transverse strains; and the pipes were fractured in the manner they are now found when the load of the filling in was first applied. I cannot recommend concrete as a suitable material for drainage purposes in this district, because from my experience all concrete exposed to the action of running land-water in Bournemouth perishes in a very few years. I attribute this circumstance to the fact that Bournemouth land-water holds no lime in solution, and, in consequence, this water is at its maximum strength for dissolving out of the concrete the more soluble salts of lime, such as hydrate and the carbonate. Unless, therefore, the concrete used in your drainage scheme can be protected from percolating or running land-water, my advice is to discontinue its use."

Proposed Theatre for Aston, Birmingham.—Mr. Durland proposes to build a theatre at Aston, at a cost of 3,500*l*. The theatre is to hold 1,500 people.

Newington Churchyard is being laid out as a public garden and recreation-ground. The space enclosed is of considerable extent, notwithstanding the slice cut off for the widening of Newington Butts. The paths are being covered with tar-paving by Messrs. Wright & Charlton. A clock-tower, erected at the cost of the late Mr. R. S. Faulconer, marks the spot whereon the parish church formerly stood. The wall which has been erected in red brick broadside of the house which bounds the ground at its north-east corner, is one of the ugliest specimens of builders' "Gothic" to be met with in a day's march. It is altogether out of character with the old house of which it forms the side. This house is a mere brick-box of the Georgian period, and has a nearly flat roof; yet the "Gothic" side-wall is carried up above the roof with two high-pointed gable-ends towards the churchyard, with nothing behind them. Who is responsible for this abortion I do not know. It is described by a local paper as having an "ecclesiastical cut" about it, but it certainly does not harmonise, either in form or colour, with the neighbouring red-brick church of St. Gabriel.—L. J. D.

Edinburgh and Leith Engineers' Society. The first meeting of this society for the session was held on the 6th inst., Mr. Robert C. Reid, president, in the chair. The opening address was given by Mr. Alexander Clark, C.E. He dwelt upon the desirability of the society appointing investigation committees to inquire into the construction of engineering works and into the nature of the materials used, and to report upon the suitability of different competing machines for doing various kinds of work. It would be well to have the merits of all patents as they came out thoroughly examined and reported upon by selected members of the society, and he suggested that it would be a great improvement if by some means it could be made allowable by the patent law to combine into one all the good points of several patent machines for doing the same work. Hand labour was sure, in future engineering works, to be, even still more than at present, superseded by machinery, as there was almost no kind of work which the latter could not do better and more cheaply.

Skegness Pier Company.—A meeting of the Pier Company was held on the 8th of October, at Hildred Hotel, to examine the plans that were sent in in reply to the advertisement inviting engineers to compete, a prize of 50*l*. being offered for the best plan. There were forty-four competitors. The directors selected the following five as being most suitable, viz., Mr. T. Claxton Fidler, Westminster; Messrs. Page & Harwood, Cardiff; Messrs. Clarke & Pickwell, Hull; Mr. T. W. Smith, London; Messrs. Head, Wrightson, & Co., Stockton-on-Tees. The meeting was then adjourned until the 22nd ult., when the plans prepared by Messrs. Clarke & Pickwell, of Hull, were unanimously selected as being best adapted for the requirements of Skegness, and were adopted accordingly, Messrs. Clarke & Pickwell being requested to prepare the necessary particulars for the Board of Trade. Its total length will be 1,842 ft., with seats the full length of each side having ornamental sun and wind arbours at intervals. The head is very extensive. The estimated total cost is 18,000*l*.

Deserved Honour.—We hear with extreme pleasure, on both personal and public grounds, that the Queen has been graciously pleased to signify her Majesty's intention of conferring on Mr. B. Thomas Brandreth Gibbs, vice-president of the Royal Agricultural Society, and general superintendent of the Agricultural Division of the British Section of the Paris Exhibition, of 1878, the honour of knighthood. Mr. Gibbs has long given valuable time to the service of the public. He contributes some useful Notes on British Agricultural Machinery, &c., at the Paris Exhibition, which have not yet received the attention they deserve.* We understand Mr. Gibbs has received a graceful autograph letter from H.R.H. the Prince of Wales.

Cottage School-Homes at Withington. The Chorlton Board of Guardians, on the 8th inst., adopted the plans and specifications submitted by Messrs. Mangnall & Littlewoods, architects, of Manchester, for the proposed new children's schools and homes at Withington. The total estimated cost is 14,470*l*., and accommodation is to be provided for 300 children.

* Paris Exhibition; Catalogue of the British Section. Part II.

The Proposed Colonial Museum and the Royal Horticultural Society.—Acting upon a suggestion made by the colonial representatives to the Prince of Wales, a short time since, at the British Embassy in Paris, that a colonial museum should be established in London, the Royal Horticultural Society, on the suggestion of one of the fellows, is about to call a meeting of the Society, to consider the advisability of allocating as a site for the proposed colonial museum the lower or south end of the gardens at South Kensington, in which the Society might have a space set apart for the transaction of their business, and for holding their flower and fruit shows, and steps are now being taken to effect an amalgamation of the existing site committee with the Commissioners for the Colonial Museum. In this way it is hoped that the termination of the Horticultural Society's tenancy of the gardens at South Kensington may be avoided.

Value of Land in the City.—Messrs. Debenham, Tewson, & Farmer have let by auction on building lease, No. 20, Bucklersbury, the premises of Messrs. Horner & Co., the wholesale druggists, in whose occupation the premises appear to have been for so many generations that Shakspeare may have referred to them as emitting the "scent of Bucklersbury." After a spirited competition, the property was declared to be let for eighty years, the first six months at a peppercorn, and afterwards at 1,200*l*. a year. The area on the ground-floor is 2,580 square feet.

New Military Offices, York.—The military and Royal Engineer staff of the Northern District have now removed from their old headquarters at Manchester to a commodious suite of offices in York. These have recently been erected by Mr. Weatherley, builder, York, under the direction of Major Malcolm, R.E.; and we understand that all the locks and door furniture (which are of a special make) have been supplied, according to the War Department specification, by Mr. James Hill, of London. We may add that other large military works are now in progress in York, where it is intended to form one of the largest depôt centres in the kingdom.

Wiltshire Archæological Society.—The annual general meeting of the Wiltshire Archæological and Natural History Society was held on the 6th inst., in the Society's Museum, at Devizes, the Rev. Canon Jackson presiding. The annual report states that the number of members is 375. Regret is expressed at the death of, amongst others, Mr. William Blackmore, one of the vice-presidents of the society, and the "munificent founder of the Blackmore Museum at Salisbury,—a museum of prehistoric archæology," says the report, "second to none in the world." Mention is also made of the death of Mr. Edward Stevens, secretary of the society.

Afghanistan.—It need scarcely be said that Mr. Wyld has issued a map of Afghanistan and the north-west frontier of India. It shows the whole course of the river Indus, Cabul, Herat, Candahar, Quettah, Khelat, with the mountain passes and military positions, and the adjoining military stations in India. It has the aspect of closer surveying than we should have expected.

Walwyn's Castle Church, Pembrokeshire.—This church, which is one of the finest in the county of Pembroke, was re-opened on the 25th ult. by the Lord Bishop of St. David's, the work of restoration, or rather rebuilding, having taken nearly ten years. The architect at first was Mr. F. Wehnert, who at his death was succeeded by Mr. E. H. Lingen-Barker.

The Parkes Museum of Hygiene.—Mr. Mark H. Judge has been appointed curator of the Parkes Museum of Hygiene, University College, London, the arrangements in connexion with which are so far completed as to make it probable that the museum will be opened early in the new year.

Lowestoft.—At a meeting of the Lowestoft Improvement Commissioners and Urban Sanitary Authority, held on the 14th ult., instructions were given to Mr. R. H. Inch, C.E., town surveyor, to prepare plans, &c., for a complete system of sewerage for the whole district.

The New President of the Royal Academy.—We mention with great gratification that at a general assembly of Academicians, held on Wednesday evening, Mr. Frederick Leighton, R.A., was elected President, in the room of the late Sir Francis Grant.